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UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 697

Contribution from the Bureau of Plant Industry
WM. A. TAYLOR, Chief

Washington, D. C. ▼ September 27, 1918

CITRUS-FRUIT IMPROVEMENT: A STUDY OF BUD VARIATION IN THE MARSH GRAPEFRUIT

By

A. D. SHAMEL, Physiologist in Charge, L. B. SCOTT, Pomologist, and C. S. POMEROY, Assistant Pomologist, Fruit-Improvement Investigations, Office of Horticultural and Pomological Investigations

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By A. D. SHAMEL, *Physiologist in Charge*, L. B. SCOTT, *Pomologist*, and C. S. POMEROY, *Assistant Pomologist, Fruit-Improvement Investigations, Office of Horticultural and Pomological Investigations.*

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INTRODUCTION.

The commercial production of grapefruit (*Citrus grandis* Osbeck) in California began about 1890. Previous to this time, bearing grapefruit trees of many varieties were to be found in some citrus orchards, but the crops from these trees were largely used for home consumption or were sold in local markets. Most of the early plantings were of Florida-grown trees and of varieties many of which proved to be undesirable for California conditions. The fruits usually contained a large number of seeds and were inferior in size, shape, texture, flavor, or other important commercial characteristics.

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[1] This is the third in a series of publications summarizing the citrus fruit-improvement investigations of the United States Department of Agriculture. The two previous reports were presented in Department Bulletins Nos. 623 and 624, treating of the work with the Washington Navel orange and the Valencia orange, respectively.

Consequently, the reputation of California grapefruit in many important markets was below that of fruit from other grapefruit-growing regions, and the culture of this fruit in the State was found to be unprofitable in most instances.

One of the varieties introduced into California from Florida about 1890 was later known as the Marsh, or, as it has been more commonly called, the Marsh Seedless. The trees of this variety were found to produce superior fruits, particularly from the standpoint of commercial quality, including the characteristics of a flattened, desirable shape, smooth texture and fine color of rind, few or no seeds, abundance of juice, tender and palatable rag, and a highly developed grapefruit flavor.

The former lack of commercial success of the California grapefruit industry, due to the planting of varieties not suitable for California conditions, discouraged extensive plantings of this fruit for many years. The success of the Marsh variety, not only in western but in some eastern markets as well, has led to a recent reawakening of interest in the production of this fruit in California and to extensive commercial plantings in several districts. The fruits of the Marsh variety ripen during the late spring and summer months in California. The Florida grapefruit crop is largely marketed during the late fall, winter, and early spring months, so that the California-grown Marsh grapefruit crop can be sold in eastern markets at a time when it does not compete with the Florida crop or the crops of other important grapefruit-growing regions. In addition to the eastern, there are several important California markets which must be supplied with California-grown grapefruit on account of a rigid quarantine against all grapefruit from other districts. This quarantine has been established by reason of the danger of the introduction of serious citrus pests and diseases into the orchards of that State.

The Thirteenth Census gives the production of California grapefruit in 1909 as 122,515 boxes. The production of other important California citrus fruits that year was 14,436,180 boxes of oranges, 2,756,221 boxes of lemons, 3,581 boxes of tangerines, and 555 boxes of mandarins.

The plantings of grapefruit trees in California in 1910 were shown by the Thirteenth Census to total 43,424 bearing trees. Figured at the rate of 90 trees to the acre, these trees were planted on about 482 acres. At the same time it was found that there were 25,589 trees not in bearing, which, at the rate of planting mentioned above, would amount to 284 acres of nonbearing trees.

The plantings in 1915, as shown by figures compiled by the California Fruit Growers' Exchange,[1] consisted of 56,224 trees, or about 625 acres in bearing, and 203,580 trees, or about 2,262 acres, not in bearing. The past season several additional large plantings of the Marsh variety have been made, particularly in the Imperial and Coachella Valleys in southern California, and many smaller plantings have been made in other citrus districts of the State.

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[1] Letter from F. O. Wallschlaeger, Los Angeles, Cal., June 7, 1916.

While the grapefruit crop of California at present is of relatively small commercial importance as compared with the orange or lemon crops, it seems likely that in the next few years it will become a more important factor in the citrus industry of the State. Many of the growers, with this viewpoint, have organized the California Grapefruit Club, for the special purpose of cooperating in extending the market for this fruit, in order to take care of the greatly enlarged production now in prospect. One of the most important means for increasing the consumption of this fruit is through the improvement of the crop by discarding all inferior varieties, standardizing the Marsh variety by the elimination of all trees of inferior and poor strains,[1] and the growing of only the best strain, propagated from the most productive and valuable trees, selected on the basis of their performance records.

The California Grapefruit Club took official action to this end during the season of 1916. It began a tree-census record of all of the grapefruit orchards belonging to the members of the club, securing accurate data upon the number of trees of each variety and each strain in every orchard. The members of the club agreed to top-work the trees of all varieties other than the Marsh, and the trees of all strains other than the Marsh,[2] or most desirable, strain. The top-worked trees for the most part have been rebudded with buds secured from superior select trees of the Marsh strain, or, in a few cases, with buds from trees of other varieties of citrus fruits. Most of this work has already been accomplished, and it was expected that it would be completed during the season of 1917.

In March, 1917, the California Fruit Growers' Exchange, through its field department, undertook similar work for its members with the standard orange and lemon varieties. Individual-tree performance records are being kept in several very productive groves, for the purpose of locating desirable trees as reliable sources of bud wood for use in top-working or for the propagation of young trees. This action was taken because the commercial nurserymen were able to supply only a very small part of the bud wood or nursery trees of this character demanded by the citrus growers.

These actions are interesting examples of the utilization of the results of scientific research in agriculture by large commercial organizations.

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[1] The term "strain" is here used to designate a group of individuals of a horticultural variety which differ from all other individuals of the variety in one or more constant and recognizable characteristics capable of perpetuation through vegetative propagation.

[2] The name Marsh has been applied to the best strain of the variety, because, as nearly as can be determined, it is similar in character of tree and fruit to the original Marsh introduction.

HISTORY OF THE VARIETY.

The Marsh variety of grapefruit was introduced by Mr. C. M. Marsh, at Lakeland, Fla.[1] The original tree was one of a grove of large seedling grapefruit trees near the city of Lakeland owned by Mr. Marsh.

In 1895 this tree was killed to the ground during the freeze of that year, at which time it was 50 or 60 years old. Previous to the freeze, Mr. Marsh had begun to propagate from this tree, on account of the superior qualities of its fruits, which were commercially seedless,[2] usually producing only three to five seeds. At the time of the freeze he had some 50,000 or 60,000 nursery trees budded from the parent tree and its progeny, but these trees were killed by the freeze. Fortunately, before the freeze, Mr. Marsh had collected and stored in his packing house about 70,000 buds for spring budding. After the freeze, all available stocks were budded with these stored buds, and from this propagation about 10,000 young trees were secured. The distribution of these trees and buds cut from them marked the introduction of this variety in Florida. It was about this time that the name Marsh Seedless was given to the variety by the originator. Later, the American Pomological Society adopted the name Marsh, instead of Marsh Seedless, for this variety.

The first introduction of the Marsh variety into California was probably accomplished by the nursery firm of Twogood & Cutter, at Riverside. In a letter [3] from J. E. Cutter the following account of this introduction is given:

> In 1890, Dr. N. A. Claflin, later horticultural commissioner of Riverside County, went to Florida as agent to ship stock for the nursery trade of Twogood & Cutter. Returning, he brought a small bundle of seedless grapefruit trees, obtained at Lakeland or vicinity. He did not report the name "Marsh Seedless," but the Marsh is understood to have originated at that place, and there can be no reasonable doubt that they were such. I do not know of any other strain. One of these trees was planted by myself in my (present) home grounds, where it still stands. So far as I know and believe, it was the first "seedless" to bear fruit in this State, but doubtless others also obtained the variety from Florida.

The tree planted by Mr. Cutter in his home grounds is shown in Plate I. It is the true Marsh variety beyond question.

Many of the Marsh grapefruit orchards in California were planted with trees which were propagated by Twogood & Cutter or other California nurserymen from the Claflin introduction. A few orchards were planted with Florida-grown trees or from later introductions of Marsh bud wood from Florida.

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[1] Personal statement of Mr. Marsh, Jacksonville, Fla., May, 1916.

[2] The presence of not over 12 seeds per fruit is considered by the California Grapefruit Club as permissible in fruits designated as commercially seedless.

[3] Letter from Mr. Cutter, Riverside, Cal., June 13, 1916.

Hume states[1] that under Florida conditions, the fruit of the Marsh variety "has not the distinct, pronounced flavor of the typical fruit, but the quality is good, and the fact that it is so nearly seedless is a very desirable feature." The effect of climatic and, perhaps, other conditions in California has been such as to produce in the fruits of this variety the highly developed grapefruit flavor desired.

A similar illustration of the effect of climatic and other conditions on the quality of citrus fruits is found in the behavior of the Washington Navel orange. In the tropical region at Bahia, Brazil, these oranges lack the highly developed flavor which the fruits of this variety possess when grown in California.

In California the trees of the Marsh grapefruit normally bloom in March, and the fruits from this bloom ripen from May to September of the following year. Owing to this condition, the trees frequently support two crops, both young and nearly mature fruits, at the same time during the spring and summer months.

The trees of this variety in California are usually more productive than the trees of the Valencia or Washington Navel orange varieties under the conditions of soil and climate best suited to the development of the finest quality of grapefruit; i. e., a fertile, coarse or sandy loam soil, and the same climatic conditions which are most favorable for the production of the highest flavor and quality in the Washington Navel orange.

VARIABILITY WITHIN THE VARIETY.

Bud variation in trees of the Marsh variety of grapefruit occurs with about the same degree of frequency as is the case with the Washington Navel orange and other varieties of citrus fruits which have been studied in the course of the investigations for the improvement of citrus fruits through bud selection. The variation of the fruits is of the most importance from the commercial standpoint, and for this reason this phase of the problem has been given most study. Variations of the habit of growth of the trees, foliage, and flower characteristics are probably of as frequent occurrence as those of fruit variations, but on account of the smaller commercial importance of these characteristics they have been given comparatively little attention up to the present time in these investigations. No doubt there are well-defined correlations of fruit, foliage, and flower characters, and when these correlations have been fully worked out they may be of importance in determining the character of the trees and their value for fruit production.

One of the most valuable groves of the Marsh variety of grapefruit in California at the present time was planted near Riverside in 1898. A preliminary individual-tree census study of this grove made by the senior writer in 1909 revealed the fact that there existed in the grove a striking diversity in the characteristics of the trees. Out of a total of about 500 trees, 123, or nearly 25 per cent, produced fruits having from 30 to 90 seeds in each fruit. The trees bearing these very seedy fruits were found to have a characteristic drooping habit of growth, from which it soon became possible to identify them wherever they occurred in the grove. The fruit from this grove had been guaranteed by the owner to be commercially seedless, and the occurrence of the seedy fruits in the crops, when noticed by the buyers, led to a considerable depreciation in their value on the markets. Upon the discovery that the seedy fruits were borne only by trees of a certain character, these fruits were eliminated, except those occurring as individual fruit and limb variations, by top-working the trees which produced them, using for this purpose buds selected from trees of the true Marsh strain, which is commercially seedless. One of the trees of the Marsh strain in this grove is shown in Plate II and one of the trees of the Rough Seedy strain in Plate III.

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[1] Hume, H. H. Citrus Fruits and Their Culture, ed. 5, p. 120. New York, 1913.

An interesting characteristic of the production from individual trees was revealed by the tree-census studies in the Marsh grove first studied. Some of the trees bore very heavy crops, while others, very similar in general appearance to the productive trees, bore only a few fruits. Further observation of this condition during the following years revealed the fact that some of the trees possessed the habit of bearing heavy crops one season and light ones the next. The trees having this habit have been called alternate bearers, from the fact that they usually bear full crops only every other year.

Another strain of trees was found in this grove bearing fruits having a modified pyriform, or bell-like, shape in contrast with the flattened, or oblate, shape of typical fruits of the Marsh strain. These trees have been called the Bell strain on account of the shape of their fruits. This shape, from the market standpoint, is not so desirable as the flattened one of the Marsh strain, and the fruits are likely to be later in ripening than those of other strains.

The fruits borne by the trees of the Marsh strain have a comparatively thin rind of very smooth texture and waxy-white appearance. Some of the trees in the performance-record plat were found to produce fruits having very thick rinds with a rough or coarse texture and yellowish color. The fruits of this Rough strain, as a rule, have a shape more nearly round or globular than those of the Marsh strain, while the flesh, juice, and other characteristics are somewhat similar to those of that strain.

Individual-tree census observations made in other groves located in various citrus districts of southern California have brought out clearly the fact that the trees in these orchards vary in about the same manner as those in the grove described above. More than 25 per cent of the trees in the bearing orchards under observation are of strains that are inferior to the Marsh or best strain.

Among the variable fruits occurring in trees of the Marsh strain are those of the Corrugated, Seedy, Bell, and Rough strains, those having raised or sunken sections or both, navel fruits, and those showing parts typical of two or more of the strains. Fruits of the Corrugated strain are usually large, pyriform in shape, with thick, deeply creased rinds, and they are generally of inferior flavor and have little juice. Fruits of the Seedy strain are frequently very similar in appearance and other characteristics to fruits of the Marsh strain except that instead of a few or no seeds, they contain from 25 to 100 seeds each. Fruits of the Bell strain frequently have smooth rinds, and those of the Rough strain have the white color of the fruits of the Marsh strain. These fruit variations have been found to occur in trees of the Marsh strain either as single fruits or as limbs bearing several fruits.

In addition to the fruit variations listed above, absolutely seedless fruits and limbs bearing seedless fruits have been found in trees of the Marsh strain. In the studies made up to the present time, no instances have been found in which all of the fruits on a tree were absolutely seedless.

Fruits setting out of the normal blooming period often have pyriform or irregular shapes, which are undesirable from the market standpoint. These fruits usually have very thick rinds, a coarse and bitter rag, and lack the distinctive grapefruit flavor of the normal fruits borne by the same trees. No logical reason has been presented to account for the characteristics of these peculiar so-called ''off-bloom'' fruits. Some trees bear more of them than others under apparently similar conditions.

All of the strains of grapefruit described in this bulletin have been found as individual fruit or limb variations in trees of the Marsh strain. Fruits of the Marsh and other strains have been found occurring as single fruit or limb variations in trees of the Seedy, Alternate-Bearing, Bell, and Rough strains.

Many minor variations in grapefruits have been found in the course of these investigations. Their significance is not fully understood as yet, and for this reason no discussion of these variations will be offered at this time.

The presence in established orchards of trees of the several strains discovered in the performance-record plats shows the importance of this work. These various strains of the Marsh grapefruit have originated in all probability from bud variations, and there is little doubt that the diversity in the trees in existing grapefruit orchards is the result of the unintentional propagation of bud variations due to the prevailing haphazard methods of gathering bud wood. The commercial inferiority of the product from such trees constitutes one of the important reasons for the systematic selection of bud wood from trees of the right character.

The diversity of strains of the Marsh variety represented in established groves is of great commercial importance to the grapefruit industry, for the reputation and value of the crop depends on the maintenance of a uniform quality. For this reason, the identification of the Marsh strain, which is the most productive and valuable strain of the variety, and the maintenance of the purity of the strain by bud selection are of fundamental importance in the development of the industry. This does not entail any increase in the cost of producing, handling, or distributing the crop. On the contrary, from the standpoint of cost of production based on the unit cost per box, the production of the best strains can be effected more cheaply than is the case when inferior and less productive strains are present.

Fruits containing many seeds, such as those of the Seedy strain, are of much less value than those which are commercially seedless. On account of the fact that some of the seedy fruits can not be readily separated after picking from those of the Marsh or other strains, the presence of trees of this strain in established groves is detrimental to the reputation and value of the crop as a whole.

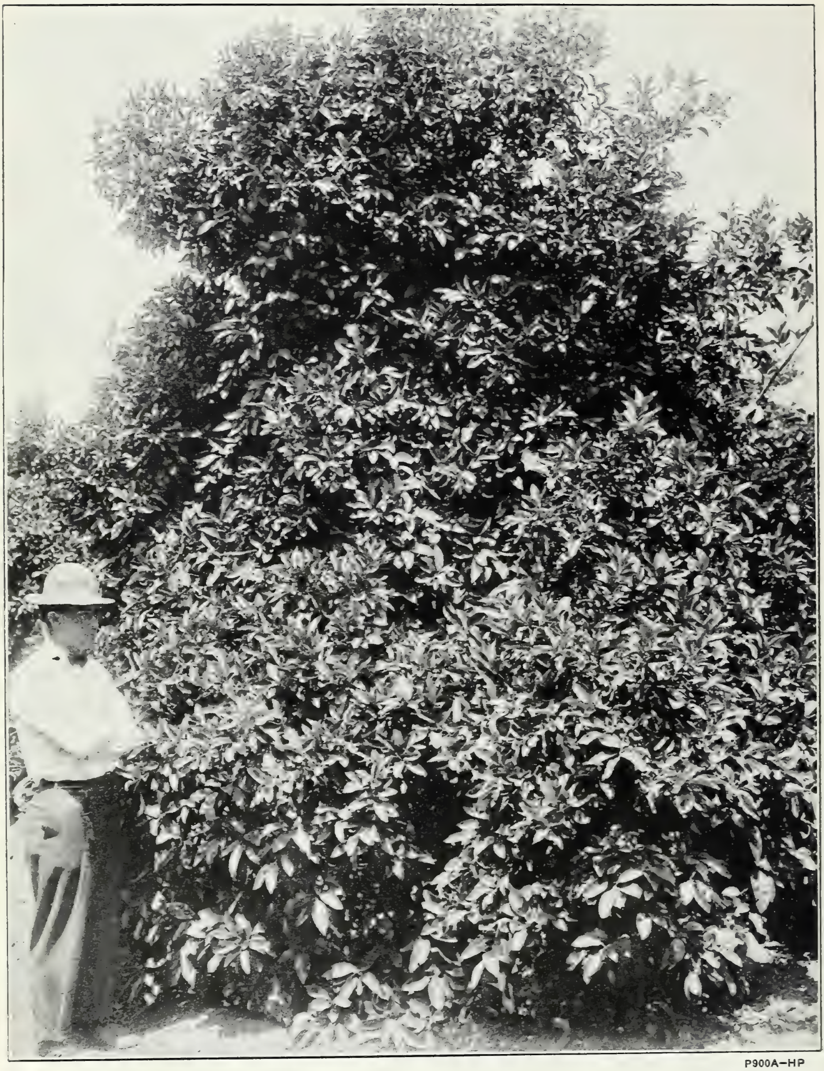
The late-ripening characteristic of fruits of the Bell strain is also detrimental to the effort to build up a superior commercial reputation for this variety. The fruits of this strain are difficult to eliminate from the general pick and pack of the groves. Because of their unripe condition, if included with fruits of the Marsh strain they tend to detract from the quality of the whole package and to injure the reputation of the variety.

OBJECTS OF THE INVESTIGATIONS.

The objects of these investigations are (1) to determine the frequency of occurrence and the nature of bud variations in the Marsh variety of grapefruit, (2) to secure definite information concerning the commercial value of the different strains of this variety by means of individual-tree performance records, (3) to originate and introduce methods for isolating the best strains and controlling variation within them through bud selection based on tree-performance records and definite tree knowledge, (4) to eliminate the trees of inferior strains in established orchards by top-working them with select buds, and (5) to demonstrate the value and importance of the use of improved methods of propagation based on definite individual-tree knowledge for the improvement of the production of established orchards and for the conservation and improvement of the variety.

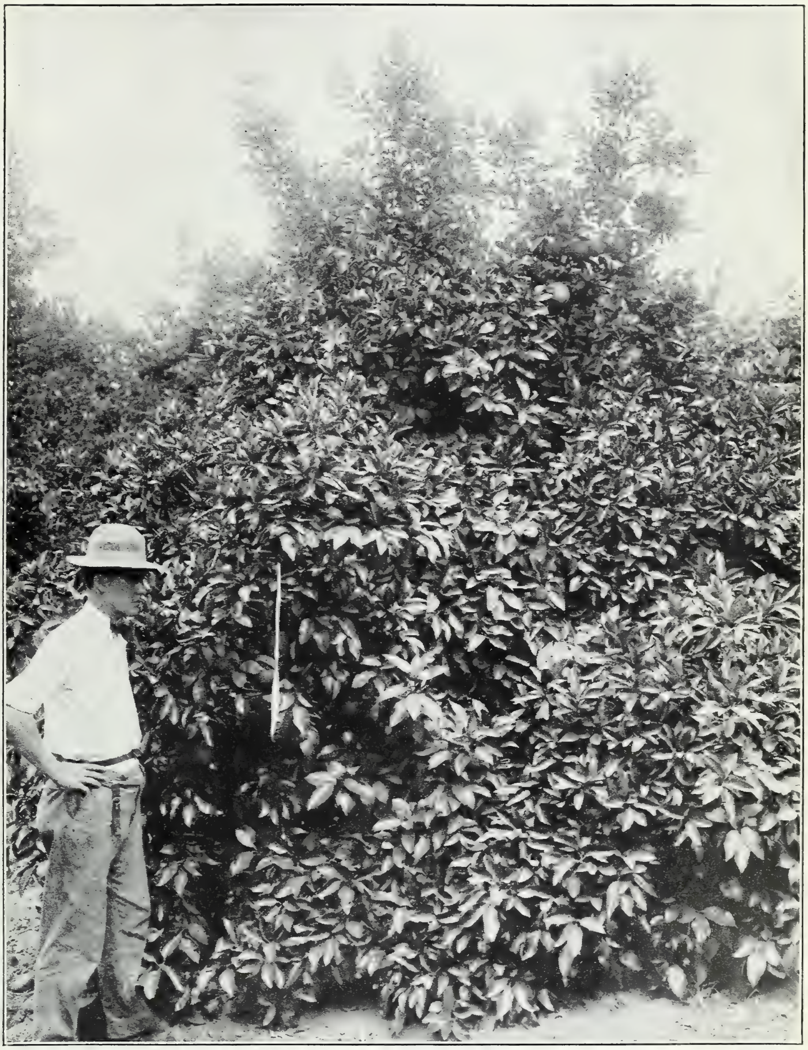
P935A—HP

THE FIRST MARSH GRAPEFRUIT TREE PLANTED IN CALIFORNIA, AT RIVERSIDE, ABOUT 1890, FROM WHICH MOST OF THE ORCHARDS IN CALIFORNIA HAVE BEEN PROPAGATED.



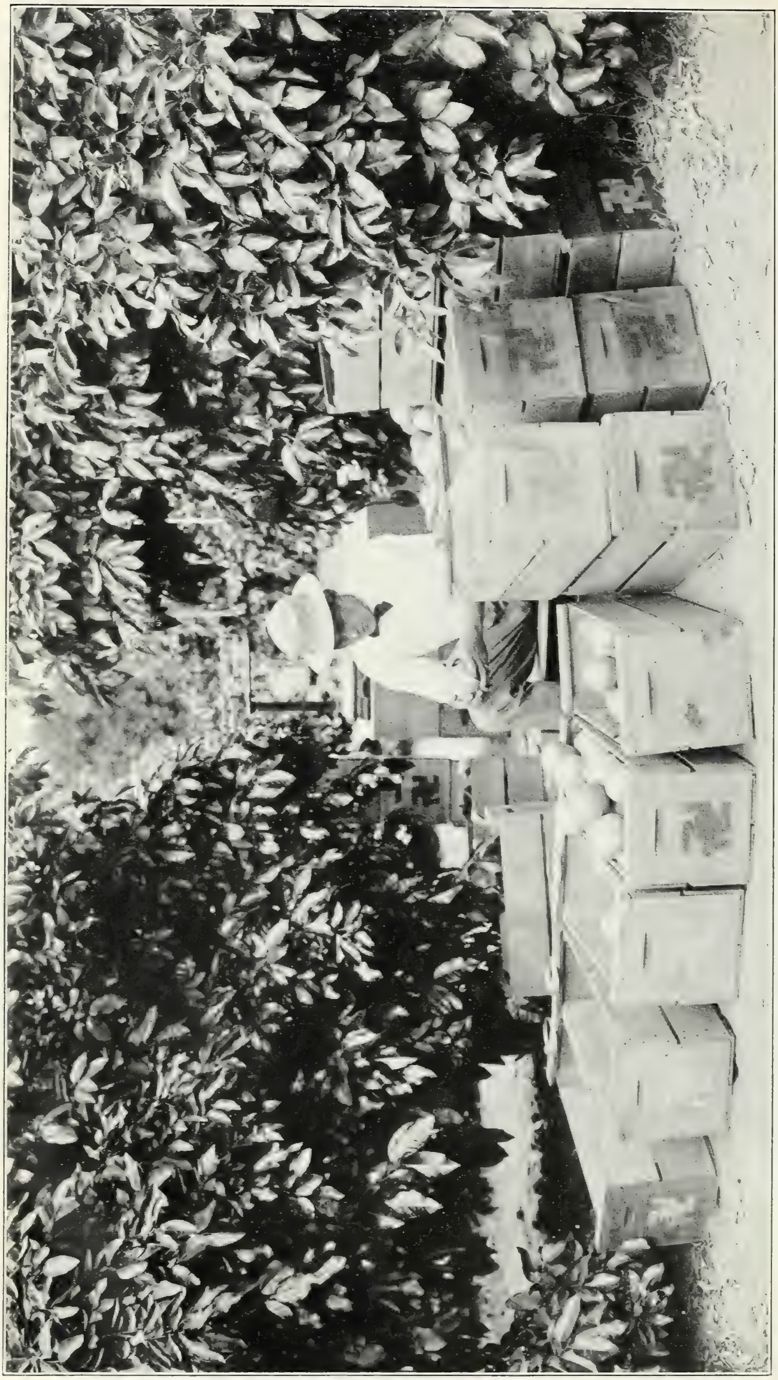
P900A—HP

A TYPICAL TREE OF THE MARSH STRAIN OF THE MARSH GRAPEFRUIT, SHOWING ITS HABIT OF GROWTH AND FOLIAGE CHARACTERISTICS.



P915A-HP

A TYPICAL TREE OF THE ROUGH SEEDY STRAIN OF THE MARSH GRAPEFRUIT, SHOWING ITS PECULIAR DWARFED AND DROOPING HABIT OF GROWTH.



A MARSH GRAPEFRUIT PERFORMANCE-RECORD PLAT IN CALIFORNIA.

The arrangement of boxes for assorting the fruits according to size and the scales for weighing the same in making individual-tree performance records are here shown.

PLAN OF THE INVESTIGATIONS.

The selection of groves of Marsh grapefruit in which to conduct the work of these investigations was made by the senior writer in 1909, following a preliminary survey of the leading districts in which the grapefruit was then grown in California. The conditions considered most desirable in the preliminary study of these groves included (1) the successful and profitable production of fruit; (2) uniformity of soil and cultural conditions in the groves; (3) protection from tree injuries due to extreme climatic conditions, insect enemies, and fungous diseases; (4) definite knowledge of the source of buds and stocks from which the trees were grown; (5) plantings on virgin land; (6) reasonable assurance of several years of uninterrupted observations under the same orchard management; (7) the use of little or no manures or fertilizers and the absence of radical tree or cultural treatments; and (8) locations where the results of the investigations would be of the most service and value to the industry.

The performance-record plats finally selected for systematic observations were located in groves where the work of these investigations could be carried on with the least possible danger of interruption and where the conditions were as nearly as possible identical with those mentioned above. The trees studied in these investigations have all been grown on sweet-orange stocks, and the history of the buds used in their propagation is known.

In one performance-record plat, 25 trees were originally selected in one block for individual-tree study, and later another tree was added to this number. In the second performance-record plat, 52 trees in one block were originally selected for study, to which number 26 select trees have been added during subsequent seasons. Individual-tree records for six consecutive years have been obtained from the 25 trees in the first plat and from the 52 trees in the other plat. Most of the information presented in this bulletin was obtained from a study of the performance records of these 77 trees first selected for this work.

As a result of the performance-record work discussed in this bulletin, progeny tests of select trees and bud variations have been begun both by top-working bearing trees and with nursery stocks. Some of the results thus far obtained from these propagations will be discussed briefly at this time, but the complete description of such work will be left for publication in later reports.

METHODS OF KEEPING PERFORMANCE RECORDS.

The methods used in keeping the individual-tree performance records are fully described in Farmers' Bulletin 794 of the United States Department of Agriculture, entitled "Citrus-Fruit Improvement: How to Secure and Use Tree-Performance Records." In order to make the present discussion complete, the following brief résumé of the methods used for obtaining the grapefruit performance-record data is here given.

TREE NUMBERS.

The performance-record trees have been given individual-tree numbers, consisting of the number of the block, the number of the row, and the position of the tree in the row, counting always from some fixed point, as, for example, the irrigation head. This number is painted on the tree trunks, always in the same relative position, with white-lead paint. The figures are made large and plain and are so placed as to be easily legible and accessible.

PICKING.

The trees are picked by trained pickers from the regular crews employed on the properties where the plats are located. Usually the same men have picked the performance-record plats every season. In this work all of the fruits of each tree have been picked at one time. Owing to the fact that the eastern market season for California grapefruit is best in midsummer, a condition which has been recognized fully only recently by the California growers, the time of picking the performance-record plats has been postponed each year, until at the present time it begins during the latter part of June.

The fruits from the trees in the performance-record plats are, of necessity, handled more often than is ordinarily the case. For this reason, especial care has been used in handling, in order to avoid so far as possible all mechanical injuries to the fruits. After the performance-record observations have been completed, the crop of each tree, except such samples as may be required for further study, is included in the general field crop and sent to the packing house.

ASSORTING.

The fruits from the individual trees are assorted into three grades, viz, Ivory-White, Standard, and Cull. The Ivory-White or commercial grade corresponds to a first and the Standard to a second grade. The Ivory-White grade includes all of the most valuable commercial fruits; the Standard, all of the blemished fruits, or those having poor color, shape, or other inferior commercial characteristics, but suitable for shipment to market; and the Cull grade, those fruits which for any reason are not worthy of packing for the market.

The work of assorting grapefruits according to size and grade has, of necessity, been done by hand, as shown in Plate IV. No machines such as are used with other citrus fruits are available for sizing Marsh grapefruits satisfactorily for these investigations. In the performance-record work the fruits are first assorted into the usual commercial sizes, viz, 112 and smaller, 96, 80, 64, 48, 32, and 24 and larger, indicating the number of fruits per packed box. This work is done by the aid of rings, so that the assortment will be uniform for all trees. In commercial practice the sizing is largely done without the use of rings. After the fruits have been assorted according to size, each lot is assorted according to grade.

RECORDING.

The fruits of each grade of each size are counted and weighed, and the results entered on the performance-record blank, as shown in Table I, embodying the data from a productive tree of the Marsh strain of Marsh grapefruit in investigational plat A of the Dixon grove (planted in 1898), grown by L. V. W. Brown at Highgrove, Cal. At the time of entering the record one fruit of each grade of three sizes, viz, large, medium, and small, is laid aside for examination as to the number and characteristics of the seeds. Any variable or other unusual fruits are also taken out at this time for further detailed study and classification. The detailed performance record of each tree is copied from the field form on an annual form similar to that shown in the upper part of Tables I and II, and the summary record from the annual form is in turn entered on a period form, as shown in the lower part of Tables I and II.

TABLE I.—*Performance record of Marsh grapefruit tree No. 1–14–30, Productive Marsh strain,*[1] *showing the weight and number of fruits of each size and grade, seeds counted, and sports noted in detail for the season of 1912 and summarized for the 6-year period, 1910 to 1915, inclusive.*

[The summarized 6-year record illustrates the method of assembling the data of successive seasons for careful comparison and study. In practice, the variable fruits produced by the tree each season are listed on the back of the form. The weights are given in pounds and ounces, except that the 6-year totals and the averages are expressed decimally in pounds. This tree is listed in rank 1 of Table III.]

DETAILED RECORD FOR THE SEASON OF 1912.

Sizes of fruits.	Fruits.								Seeds.[2]	
	Ivory-White grade.		Standard grade.		Cull grade.		Total.		Ivory-White grade.	Standard grade.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
	Lbs. oz.		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
112 and smaller	48–13	74	69– 9	111	....	....	118– 6	185	1	3 0
96	36–10	49	28–10	37	....	....	65– 4	86	....	....
80	56–14	71	42– 4	51	....	....	99– 2	122	....	....
64	63– 5	71	27–15	31	....	....	91– 4	102	0	5 4
48	61– 7	63	24– 3	25	....	....	85–10	88	....	....
32	37– 0	36	8– 7	8	....	....	45– 7	44	....	....
24 and larger	65–12	55	11– 7	10	....	....	77– 3	65	0	0 1
Total	369–13	419	212– 7	273	....	....	582– 4	692	1	13
Grand total	....	....	....	....	8– 0	19	590– 4	711	14	

[1] NOTES.—Date: May 6, 1912. Fine large Marsh tree. Sports: Ridged, 2.

[2] Seeds of cull fruits not counted.

TABLE I.—*Performance record of Marsh grapefruit tree No. 1–14–30, etc.*—Continued.

SUMMARIZED RECORD FOR SIX SEASONS.

Grades and sizes.	1910	1911	1912	1913	1914	1915	Total.	Average.
Weight of fruits:	*Lbs. oz.*	*Lbs. oz.*	*Lbs. oz.*	*Lbs. oz.*	*Lbs. oz.*	*Lbs. oz.*	*Lbs. oz.*	
Ivory-White grade	187– 9	109– 9	369–13	149–12	240–12	292–11	1,350– 2	225.0
Standard grade	304– 7	532–11	212– 7	238– 7	218–12	192– 3	1,698–15	283.2
Cull grade	0– 0	0– 0	8– 0	72– 3	18– 0	21– 4	119– 7	29.9
Grand total	492– 0	642– 4	590– 4	460– 6	477– 8	506– 2	3,168– 8	528.1
Sizes—								
112 and smaller	47–15	394– 0	118– 6	241– 1	77– 8	152–13	1,031–11	171.9
96	18– 8	56– 9	65– 4	66– 9	83– 8	67– 2	357– 8	59.6
80	53–12	65–11	99– 2	36– 6	66–15	91– 6	413– 4	68.9
64	70– 9	56– 4	91– 4	17– 9	88– 5	70–15	394–14	65.8
48	61– 6	38– 6	85–10	10– 5	66– 1	44– 4	306– 0	51.0
32	66– 8	10–10	45– 7	5– 9	36–14	24– 6	189– 6	31.6
24 and larger	173– 6	20–12	77– 3	10–12	40– 5	34– 0	356– 6	59.4
Total	492– 0	642– 4	582– 4	388– 3	459– 8	484–14	3,049– 1	508.2
Number of fruits:								
Ivory-White grade	180	133	419	223	277	335	1,567	261
Standard grade	307	717	273	333	272	238	2,140	357
Cull grade[1]	0	0	19	193	54	36	302	76
Grand total	487	850	711	749	603	609	4,009	668
Sizes—								
112 and smaller	72	583	185	360	125	221	1,546	258
96	24	68	86	97	108	81	464	77
80	62	75	122	49	77	103	488	81
64	76	59	102	22	99	73	431	72
48	61	38	88	12	69	43	311	52
32	60	10	44	6	36	23	179	30
24 and larger	132	17	65	10	35	29	288	48
Total	487	850	692	556	549	573	3,707	618
Number of seeds:								
Ivory-White grade—								
112 and smaller	(2)	2	1	3	1	3	10	2.0
64	0	1	0	0	6	3	10	1.7
24 and larger	(2)	3	0	0	3	6	12	2.4
Standard grade—								
112 and smaller	(2)	(2) 1	3 0	2	2	3	8	1.6
64	0 0	3 4	5 4	2	4	2	16	2.7
24 and larger	(2)	4 2	0 1	0	3	6	12	2.4
Cull grade—								
112	(2)	(2)	(2)	(2)	3	5	11	3.7
64	(2)	(2)	(2)	(2)	1	4	13	2.6
24 and larger	(2)	(2)	(2)	(2)	2	8	14	3.5
Total	0	20	14	7	25	40	106	2.4

[1] The excessive number of culls occurring in 1913 were due to the severe freeze of that season.
(2) Not counted.

Descriptions of the important strains and variations from these strains are made in the field. Photographs of typical trees and fruits and their variations are obtained during the performance-record work, in order to illustrate their characteristics. All of the information collected in this way is brought together at the end of the season and classified.

DESCRIPTIONS OF IMPORTANT STRAINS.

The following descriptions of some of the important strains of the Marsh variety of grapefruit are summarized from detailed field observations, measurements, and studies of typical trees and fruits.

They are presented for the purpose of illustrating the most important characteristics of the strains and to furnish a basis for understanding and interpreting more fully than otherwise would be possible the tables and discussions of the behavior and value of the trees of these strains.

MARSH STRAIN.

The trees of the Marsh strain, an example of which is shown in Plate II, are the most productive and bear larger crops of desirable and valuable fruits than any of the other strains of the Marsh variety. Some of the trees begin producing profitable crops at about four years from planting and yield regularly increasing crops every year. The oldest trees of this character under observation were planted in 1898. Other trees of this strain have a tendency to produce large crops one season, followed by lighter crops the next year. Some few trees of this strain are habitually low producers as compared with the most productive trees. As a rule, the most productive trees bear larger crops of first-grade fruits of the most valuable commercial sizes, viz, 80, 64, and 48 fruits per box, than are produced by the low-yielding trees. The large production of high-grade fruits from trees of this strain makes it particularly valuable from the commercial standpoint. The trees of this strain have a spreading habit of growth. The leaves are abundant, large, elliptical, acutely pointed, light green in color, and have large winged petioles. The trees normally bloom in March, and the fruits ripen during the summer months of the following year.

The fruits of the Marsh strain, a typical example of which is shown in Plate V, are oblate in shape, the stem end is usually slightly sunken, and the blossom end even and flattened. This shape is best adapted for handling, and is also a desirable one from the consumer's standpoint. The texture of skin is usually very smooth; color creamy, commonly called ivory white; bloom little or none; rind about one-quarter of an inch in thickness; color of flesh amber; number of sections 12 to 14; rag sparse and tender; vesicles medium in size; core usually open, about 1 inch in diameter; juice abundant, mildly acid, bursting from the fruit when cut, quality excellent, having desirable grapefruit flavor; seeds averaging about three per fruit, which condition is termed "commercially seedless."

Table I shows the detailed performance record of a representative tree of the Marsh strain for the year 1912 and also the summarized record of the same tree for the 6-year period from 1910 to 1915, inclusive. The record of seed content in Table I shows the small number of seeds found in fruits of this strain, several of those examined being entirely seedless.

The superior quality of the fruits of this strain is very marked. It apparently improves in storage under proper conditions, which are an even temperature of about 45° to 50° F. and about 80 to 90 per cent humidity. Under these conditions there is usually an improvement of the fine flavor and the tenderness and palatability of the flesh. For this reason the grapefruit season can be appreciably lengthened by holding the ripe fruits under storage conditions. Another factor of importance in this connection is that consumers can keep the fruits without appreciable deterioration in quality for considerable periods of time.

SEEDY STRAINS.

Two seedy strains have been found which are alike in most characteristics of tree and fruit, but which differ greatly in texture of rind and shape of the fruits.

The trees of the seedy strains, an illustration of which is shown in Plate III, bear relatively very small crops and usually have a very marked alternate-season habit of bearing. The trees have a peculiar and characteristic drooping habit of growth, giving them a dwarfed appearance, which renders their determination an easy matter when once this condition is known. The leaves are rather sparse, small to medium in size, light green in color, and are usually narrow and very sharply pointed.

All of the heavily seeded fruits are objectionable, and their presence in the regular crop tends to depreciate its value as a whole in the markets, in many cases lowering the price received about $1 per box. In addition to this direct cause of loss to the growers, the presence of fruits of the seedy strains impairs the reputation of the entire Marsh variety.

TABLE II.—*Performance record of Marsh grapefruit tree No. 1–15–29, Rough Seedy strain,*[1] *showing the weight and number of fruits of each size and grade and number of seeds counted in detail for the season of 1912 and summarized for the 6-year period, 1910 to 1915, inclusive.*

[The summarized 6-year record illustrates the method of assembling the data of successive seasons for careful comparison and study. The weights are given in pounds and ounces, except that the 6-year totals and the averages are expressed decimally in pounds. This tree is listed in rank 25 of Table III.]

DETAILED RECORD FOR THE SEASON OF 1912.

Sizes of fruits.	Fruits.								Seeds.[2]	
	Ivory-White grade.		Standard grade.		Cull grade.		Total.		Ivory-White grade.	Standard grade.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
	Lbs. oz.		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
112 and smaller	0–11	1	0–11	1	....	....	1– 6	2	53	30
96	0– 0	0	3– 4	4	....	....	3– 4	4	....	....
80	0– 0	0	9–11	11	....	....	9–11	11	....	....
64	3–14	4	7–10	8	....	....	11– 8	12	66	36 63
48	1–14	2	6–15	7	....	....	8–13	9	....	....
32	3– 2	3	16– 9	15	....	....	19–11	18	....	....
24 and larger	12– 0	10	88–11	63	....	....	100–11	73	63	55 45
Total	21– 9	20	133– 7	109	....	....	155– 0	129	182	229
Grand total	....	....	....	....	3–5	4	158– 5	133	411	

[1] NOTES.—Date: May 11, 1912. Poor shape; thick-skinned fruits.

[2] Seeds of cull fruits not counted.

TABLE II.—*Performance record of Marsh grapefruit tree No. 1-15-29, etc.*—Continued.

SUMMARIZED RECORD FOR SIX SEASONS.

Grades and sizes.	1910	1911	1912	1913	1914	1915	Total.	Average.
Weight of fruits:	*Lbs. oz.*	*Lbs. oz.*	*Lbs. oz.*	*Lbs. oz.*	*Lbs. oz.*	*Lbs. oz.*	*Lbs. oz.*	
Ivory-White grade	22-12	137- 2	21- 9	24- 9	88- 4	44-10	338-14	56.5
Standard grade	3- 6	219-10	133- 7	160- 0	122- 5	113- 7	752- 3	125.4
Cull grade	0- 0	0- 0	3- 5	53- 8	1- 7	25-10	83-14	13.9
Grand total	26- 2	356-12	158- 5	238- 0	212- 1	183-11	1,174-15	195.8
Sizes—								
112 and smaller	0- 0	98- 8	1- 6	113- 0	20- 0	16- 8	249- 6	41.6
96	0- 0	57-11	3- 4	39- 4	18-14	9- 6	128- 7	21.4
80	0-14	59- 8	9-11	14- 6	27- 3	19-14	131- 8	21.9
64	1-14	49-12	11- 8	9-15	32-14	14-11	120-10	20.1
48	1- 0	47- 9	8-13	6- 2	29- 7	17- 5	110- 4	18.4
32	2- 1	23- 8	19-11	1-14	22- 9	13- 1	82-12	13.8
24 and larger	20- 5	20- 4	100-11	0- 0	59-10	67- 4	268- 2	44.7
Total	26- 2	356-12	155-0	184- 9	210- 9	158- 1	1,091- 1	181.9
Number of fruits:								
Ivory-White grade	18	152	20	40	95	43	368	61
Standard grade	2	244	109	267	132	101	855	143
Cull grade [1]	0	0	4	116	3	33	156	26
Grand total	20	396	133	423	230	177	1,379	230
Sizes—								
112 and smaller	0	134	2	209	29	22	396	66
96	0	65	4	58	24	11	162	27
80	1	64	11	19	32	21	148	25
64	2	50	12	12	36	14	126	21
48	1	45	9	7	29	16	107	18
32	2	21	18	2	21	11	75	12
24 and larger	14	17	73	0	56	49	209	35
Total	20	396	129	307	227	144	1,223	204
Number of seeds:								
Ivory-White grade—								
112 and smaller	(2)	53	53	29	57	56	248	49.6
64	44	47	66	43	58	60	274	54.8
24 and larger	(2)	50	63	(2)	66	52	231	57.8
Standard grade—								
112 and smaller	(2)	44	30	39	36	64	183	45.8
64	57 55	43	36 63	44	39	59	260	52.0
24 and larger	(2)	51 57	55 45	(2)	45	52	256	51.2
Cull grade—								
112 and smaller	(2)	(2)	(2)	(2)	58	58	190	47.5
64	(2)	(2)	(2)	(2)	(2)	41	120	40.0
24 and larger	(2)	(2)	(2)	(2)	(2)	65	171	56.7
Total	156	345	411	155	359	507	1,933	50.9

[1] The excessive number of culls occurring in 1913 were due to the severe freeze of that season.
[2] Not counted.

ROUGH SEEDY STRAIN.

The fruits of the Rough Seedy strain, an illustration of which is shown in Plate VI, are globular, with the stem end somewhat sunken in a cuplike depression, while the blossom end is also slightly sunken or depressed. The skin is usually coarse in texture and has a dull yellow color, both of which conditions lessen the commercial value of the fruit. The rind is usually about half an inch thick; color of flesh, straw; number of sections 12 to 14; rag usually coarse and unpalatable; vesicles long and large; core usually open, about 1½ inches in diameter; juice usually abundant in quantity, strongly acid, flavor poor, quality very inferior; seeds very large, averaging about 50 per fruit. The great number of seeds found in each fruit is distinctly detrimental to the commercial value of this strain.

Table II shows the detailed performance record of a representative tree of the Rough Seedy strain for the year 1912 and also the summarized record of the same tree for the 6-year period from 1910 to 1915, inclusive. These records, in comparison with those from the tree of the Marsh strain presented in Table I, show the relatively small crops of trees of the Rough Seedy strain and the very high seed content of the fruits of that strain. The trees whose records are shown in Tables I and II grew near each other in the same plat.

SMOOTH SEEDY STRAIN.

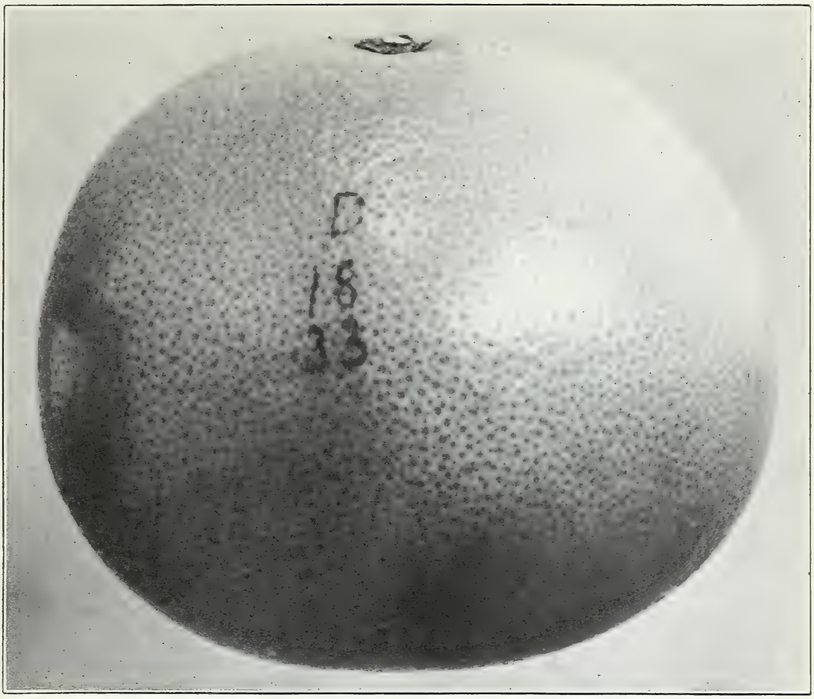
The fruits of the Smooth Seedy strain, an illustration of which is shown in Plate VII, have a flattened shape, smooth texture, and ivory-white color of rind. Entire trees of this strain have been found, and individual fruits and limbs bearing several fruits of this strain are frequently found on trees of the Rough Seedy strain. These fruits are very similar in outward appearance to those of the Marsh strain, but they usually have about the same number of seeds as typical fruits of the Rough Seedy strain, and their characteristics of flesh and juice are similar to those of that strain. Such fruits are so nearly like those of the Marsh strain that it is frequently impossible to sort them out of the general crop, even by the most careful inspection. For this reason, in orchards where trees of this Smooth Seedy strain are found it is especially important to top-work such trees, using select buds from the Marsh strain.

ROUGH STRAIN.

The production of trees of the rough strain is lower than that of trees of the Marsh strain, and the fruits are of inferior commercial quality. The habit of growth of the trees is usually erect, and the vigor of growth is greater than that of the trees of other strains of the variety. An abnormal number of branches of unusually vigorous growth, commonly called suckers, are produced by these trees. These branches usually grow very erect and are irregular in their habits of fruiting. The leaves are very large and usually somewhat sharply pointed and have large winged petioles.

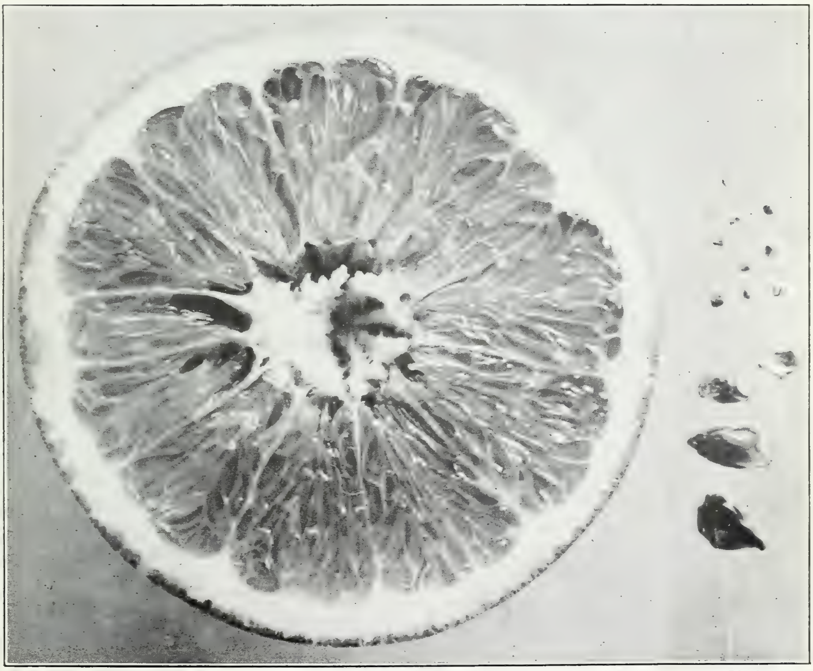
The fruits, an illustration of which is shown in Plate VIII, are globular in shape; size large; skin rough, coarse; color dull yellowish; rind about half an inch thick; rag abundant, bitter; juice scant, lacking in flavor and of inferior quality, and commercially seedless. The fruits of this strain usually ripen later than those of the Marsh strain, even when borne on different branches of the same tree.

PLATE V.



P16591—HP

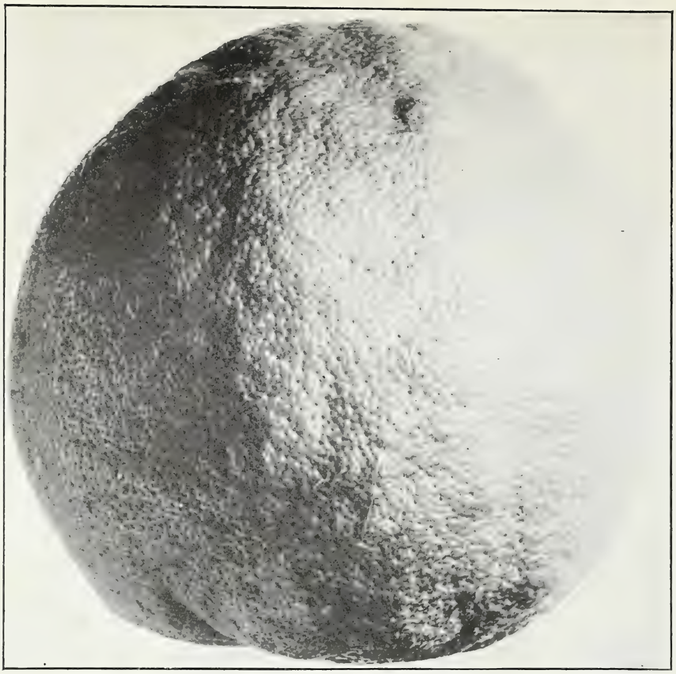
FIG. 1.—SIDE VIEW, SHOWING THE FLATTENED SHAPE AND SMOOTH SKIN CHARACTERISTIC OF FRUITS OF THIS STRAIN. (NINE-TENTHS NATURAL SIZE.)



P16592—HP

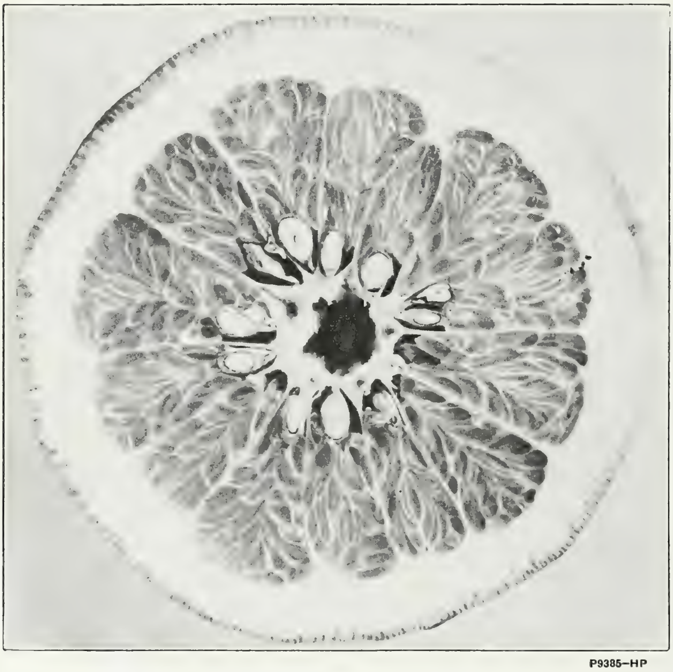
FIG. 2.—CROSS SECTION OF THE SAME FRUIT, SHOWING THE THIN RIND AND FEW SEEDS CHARACTERISTIC OF FRUITS OF THIS STRAIN. (THREE-FOURTHS NATURAL SIZE.)

A TYPICAL FRUIT OF THE MARSH STRAIN OF THE MARSH GRAPEFRUIT.



P9384—HP

FIG. 1.—SIDE VIEW, SHOWING THE CHARACTERISTIC SHAPE AND APPEARANCE OF THE FRUITS OF THIS STRAIN. (TWO-THIRDS NATURAL SIZE.)



P9385—HP

FIG. 2.—CROSS SECTION OF THE SAME FRUIT, SHOWING THE THICKNESS OF RIND AND HEAVILY SEEDED CHARACTER OF THIS FRUIT. (TWO-THIRDS NATURAL SIZE.)

A TYPICAL FRUIT OF THE ROUGH SEEDY STRAIN OF THE MARSH GRAPEFRUIT.

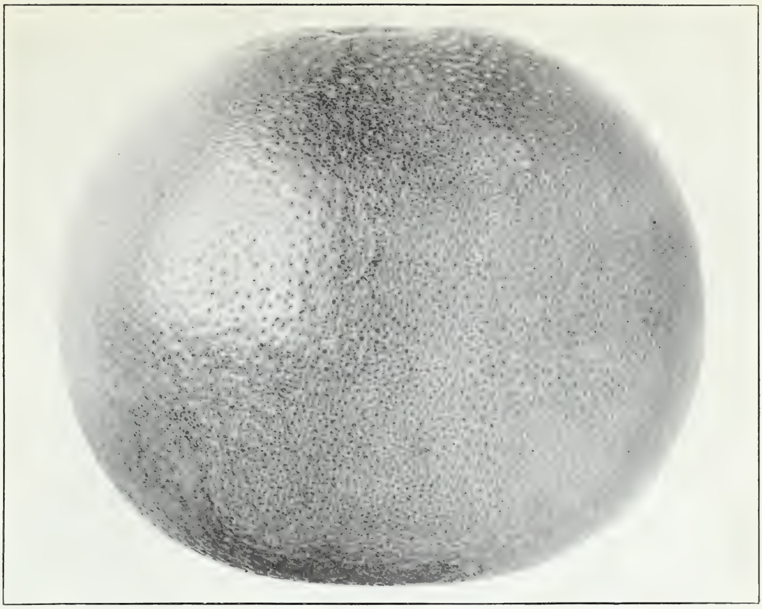

P9020—HP

FIG. 1.—SIDE VIEW, SHOWING THE CHARACTERISTIC SHAPE AND APPEARANCE OF THE FRUITS OF THIS STRAIN. THREE-FOURTHS NATURAL SIZE.)

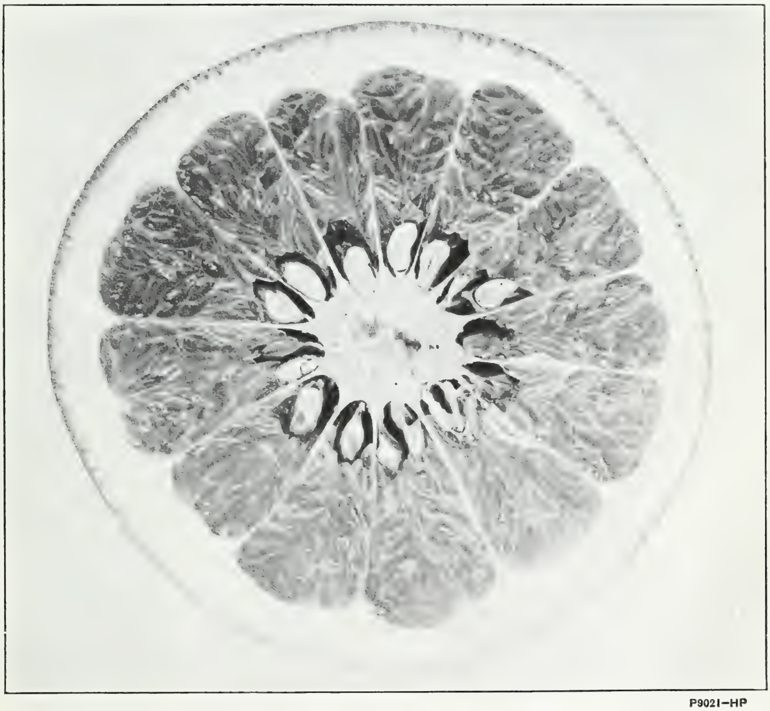
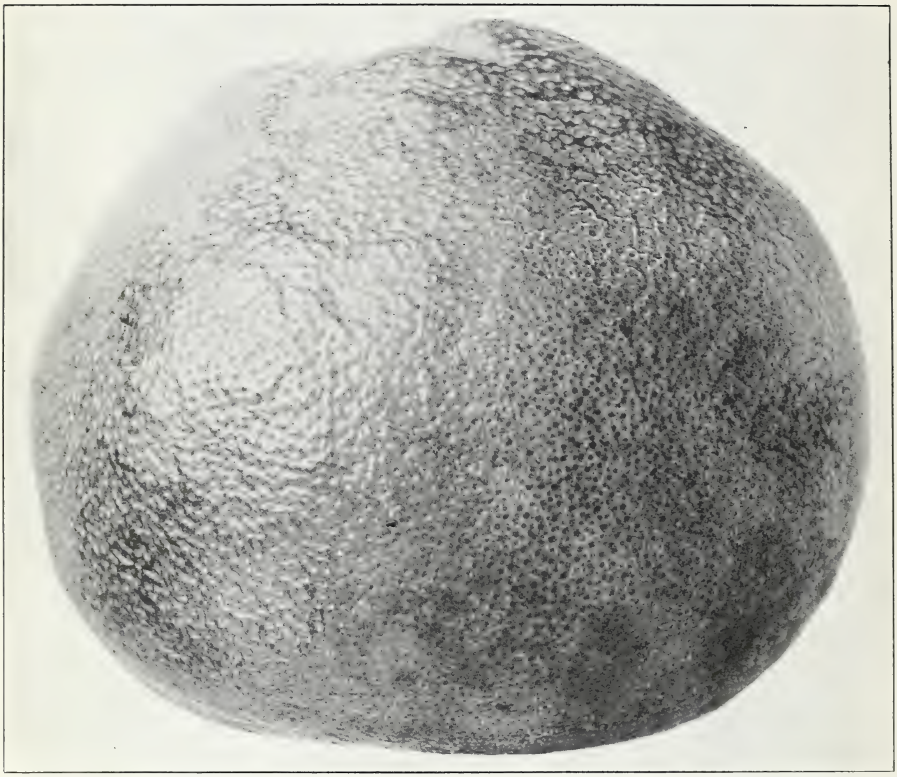

P9021—HP

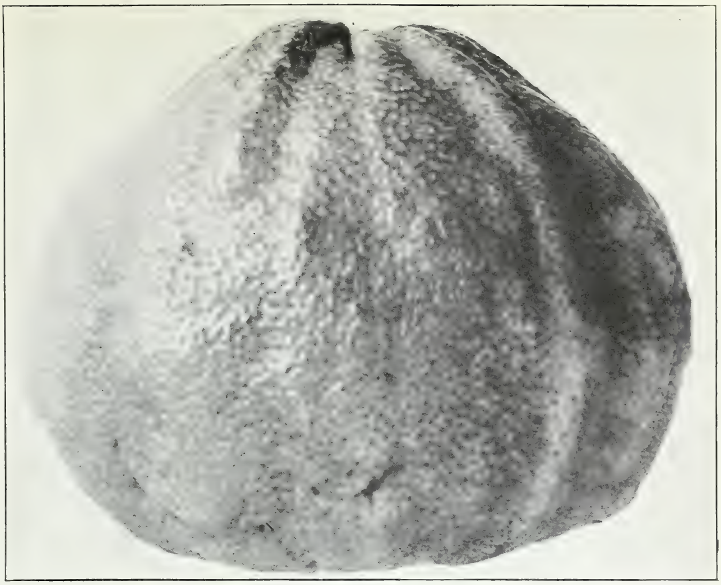
FIG. 2.—CROSS SECTION OF THE SAME FRUIT, SHOWING THE THICKNESS OF RIND AND HEAVILY SEEDED CHARACTER OF THE FRUITS OF THIS STRAIN. (THREE-FOURTHS NATURAL SIZE.)

A TYPICAL FRUIT OF THE SMOOTH SEEDY STRAIN OF THE MARSH GRAPEFRUIT.



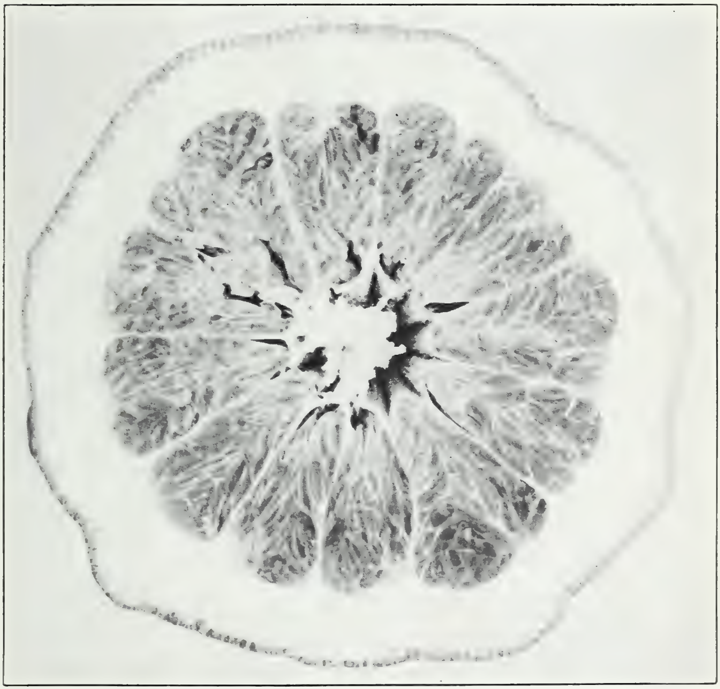
A TYPICAL FRUIT OF THE ROUGH STRAIN OF THE MARSH GRAPEFRUIT, SHOWING ITS CHARACTERISTIC SHAPE AND APPEARANCE.

(Three-fourths natural size.)



P9032–HP

FIG. 1.—SIDE VIEW, SHOWING THE PYRIFORM SHAPE AND DEEPLY FLUTED AND RIDGED CHARACTER OF THE FRUITS OF THIS STRAIN. (SEVEN-TENTHS NATURAL SIZE.)



P9033–HP

FIG. 2.—CROSS SECTION OF THE SAME FRUIT, SHOWING THE THICKNESS OF THE RIND AND THE CORE CHARACTERISTICS OF THE FRUITS OF THIS STRAIN. (SEVEN-TENTHS NATURAL SIZE.)

A RIBBED FRUIT, A STRIKING VARIATION OF THE MARSH GRAPEFRUIT VARIETY.

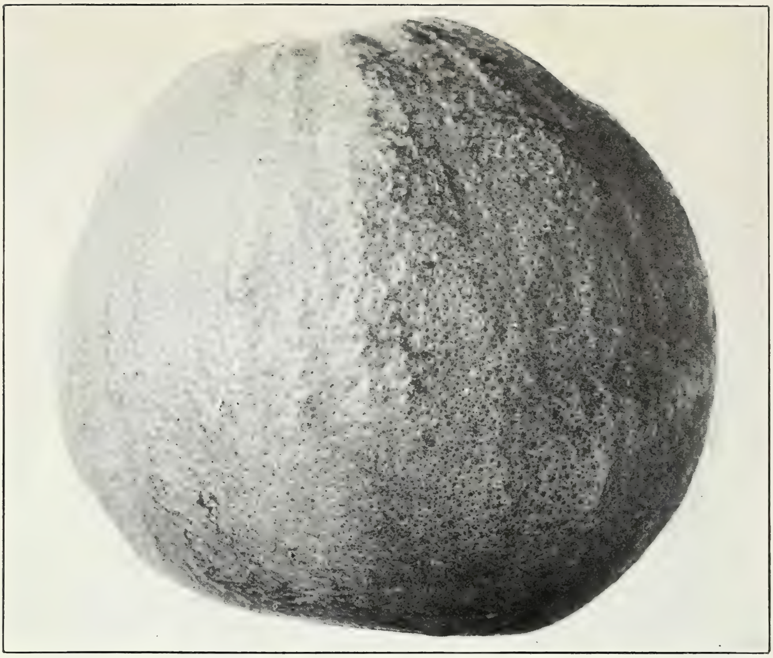


FIG. 1.—SIDE VIEW, SHOWING THE SHAPE AND CORRUGATED APPEARANCE OF THE FRUITS OF THIS STRAIN. (THREE-FOURTHS NATURAL SIZE.)

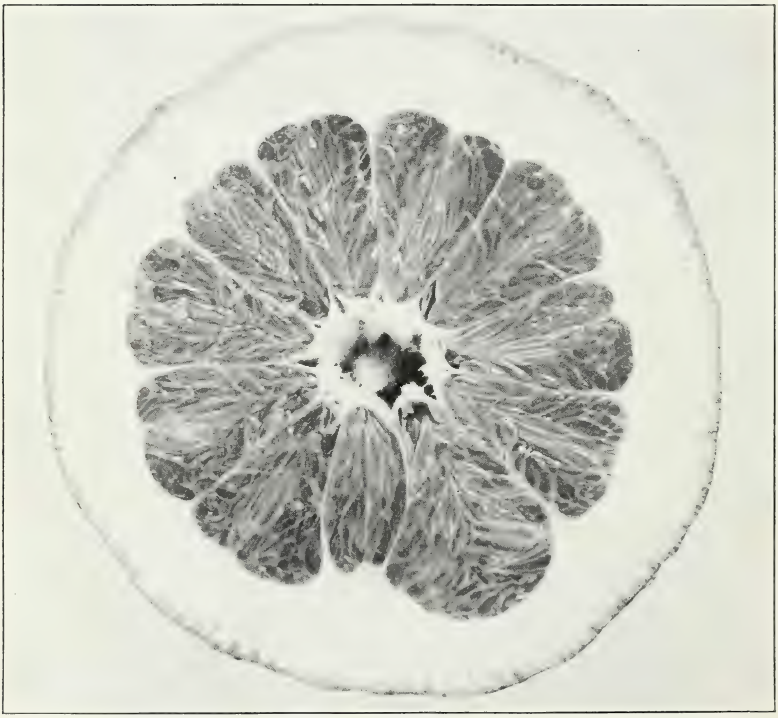


FIG. 2.—CROSS SECTION OF THE SAME FRUIT, SHOWING THE THICKNESS OF THE RIND AND OTHER CHARACTERISTICS. (THREE-FOURTHS NATURAL SIZE.)

A TYPICAL FRUIT OF THE CORRUGATED STRAIN OF THE MARSH GRAPEFRUIT.

BELL STRAIN.

The trees of the Bell strain of the Marsh grapefruit, like those of the Rough strain, are usually more vigorous and less productive than those of the true Marsh strain. Sucker growth is very abundant in trees of the Bell strain, giving them an erect habit of growth. The foliage is dense and the leaves are large and sharply pointed. The fruits resemble closely those of the Rough strain, except in shape. They are somewhat pyriform and constricted toward the stem end, giving them a bell-shaped appearance.

In addition to the trees bearing fruits having these general characteristics as a whole, "off-bloom" fruits, developed from flowers blooming out of the regular season, frequently show a marked resemblance to those of the Bell strain. As a rule these fruits are of inferior quality. They do not develop as much sugar or as good flavor as those of the Marsh strain, no matter how long they are allowed to remain on the trees, and they are very undesirable from every standpoint.

Trees bearing a large proportion of fruits of this Bell strain, or those showing a tendency toward the production of fruits of this character, should be eliminated by top-working, and should be carefully avoided in the selection of bud wood for propagation.

ALTERNATE-BEARING STRAIN.

The trees of the Alternate-Bearing strain may be divided into two groups, those bearing fruits with a large number of seeds and those whose fruits are commercially seedless. Several performance-record trees, showing a marked tendency to alternate bearing previous to the freeze of 1913, were so affected by the freeze that their production was lowered and their normal habits of production interfered with for the time being. These trees, at this time, four years after the freeze, show a tendency to an increase in production with a return of their alternate-bearing characteristic.

The important group of trees in the Alternate-Bearing strain is that which resembles closely the Marsh strain except in the characteristic of regularity of production. In habit of growth and foliage characteristics, these trees, so far as observed, can not be distinguished from trees of the Marsh strain. The fruits, except as to number or time of bearing, are so like those of the Marsh strain as to be indistinguishable from them on the basis of our present knowledge of their characteristics.

UNPRODUCTIVE STRAIN.

A smaller proportion of trees of the Unproductive strain has been found in the performance-record plats of grapefruit than has been found in studies of a similar nature with the Washington Navel and Valencia varieties of orange, or of the Eureka and Lisbon varieties of lemon. This condition may be due, in part at least, to the more recent introduction of the Marsh variety and the comparatively small amount of propagation of it, so that only a few bud generations have been available for observation. Recent commercial propagations of this variety have been made, as a rule, with the use of buds selected from trees of the Marsh strain and for the most part by the use of fruit-bearing buds, which explains the presence of only a small number of trees of the undesirable strains.

The trees of the Unproductive strain, and the fruits borne by them, are similar to those of the Marsh strain, except that the trees usually bear relatively fewer first-grade valuable fruits and show a marked alternate-season bearing habit.

INFREQUENT FRUIT VARIATIONS.

Fruits possessing many minor variations of interest and of some importance have been borne by the performance-record trees in addition to the important strains already described. These variations have not been found as frequently as has been the case in the other citrus varieties in the performance-record plats. Fruits are occasionally found that, from outside appearance, more nearly resemble oranges than grapefruits. Some of these variable fruits resemble in flesh and juice characteristics combinations of some of the qualities of oranges, tangerines, and grapefruits.

Another variation occasionally met with is the ribbed fruit, an illustration of which is shown in Plate IX. In this case the fruit is usually bell shaped and the peel has regular longitudinal ridges and depressions, giving it a ribbed or fluted appearance. The rind is usually thick, the rag is rather coarse and bitter, the juice is abundant but of inferior flavor and quality, and the fruits are commercially seedless. These fruits are probably worthless for commercial purposes.

Fruits having raised or sunken sections, or both, are of rather frequent occurrence, particularly on trees of the Seedy and Rough strains.

Several fruits having well-developed navels have been found among the fruits on the performance-record trees. In some cases they were absolutely seedless, while in other instances the fruits contained several seeds. So far, no branch or tree has been found bearing only navel grapefruits. No attempt has been made as yet to isolate a strain of navel grapefruits through bud selection, although it seems probable that this can be done. The presence of a navel in the seedless grapefruit, other things being equal, would likely be a disadvantage except as a distinctive mark for the variety.

Occasional limbs bearing absolutely seedless fruits have been observed in the performance-record trees. Other limbs have been found in these trees bearing fruits all of which were heavily seeded. Frequently individual fruits, either seedless or heavily seeded, are found in trees of the Marsh strain. However, seedless fruits occur much more frequently than heavily seeded ones.

In trees of the Rough Seedy strain, smooth, flattened, seedless fruits characteristic of the Marsh strain have been found. The occurrence of the typical Marsh fruits in the trees of the Rough Seedy strain is as much of a variation as the occurrence of ribbed fruits in trees of the Marsh strain.

In a few cases limbs have been found in trees of the Marsh strain bearing several bell-shaped, corrugated fruits with thick rinds, as illustrated in Plate X. These fruits are produced from flowers which bloom during the normal period and are not the result of flowers developed out of the regular blooming period.

Many other variations in fruits of the Marsh variety of grapefruit have been observed, but are apparently of less importance than the ones cited in the foregoing paragraphs. The studies of these fruits and their relation to bud variation and bud selection are being continued with the object of securing definite and reliable information concerning their characteristics.

SEASONAL FLUCTUATIONS IN PRODUCTION.

The influence of extreme climatic conditions upon the behavior of grapefruit trees, while less marked than in the case of orange and lemon varieties, is, nevertheless, of importance in considering the performance records of the individual trees in these investigations. For instance, the severe freeze during the winter of 1913 upset the behavior of these trees to some extent for the two following seasons. One effect of the freeze was to kill much of the tender fruit-bearing wood. Naturally the loss was greater in the productive than in the unproductive trees. The loss of this wood and the time required for the tree to repair the injury resulted in a reduction of the yield for the following seasons.

Continued dry winds, with a very low condition of relative humidity, sometimes increase the transpiration from the trees beyond the wilting point. The evaporation of soil moisture is also increased to an abnormal degree at such times, thus reducing the moisture available for use by the trees. Such conditions check the development of fruit-bearing wood and influence the amount, texture, and appearance of the rind and size of the fruits. If these dry winds occur during the blooming period, or shortly following that time, an unusual drop of flowers or young fruits occurs, so much so in some cases as to materially reduce the yield of the trees.

In the selection of parent trees for propagation on the basis of their performance records, it is necessary to take into account any unusual climatic or other conditions which may have occurred during the period of study. Of course during long periods of observation the effect of occasional extreme conditions is largely overcome, so that the records become more nearly an absolute guide.

PRESENTATION OF DATA.

The tables and diagrams here presented are prepared from the performance records of Marsh grapefruit trees in two plats, one of 25 trees planted in 1898 and the other of 52 trees planted in 1903. For convenient reference in the following discussion these plats will be designated A and B, respectively. These records cover the six years from 1910 to 1915, inclusive. However, the culls were not recorded in 1910 or 1911, so that the data shown for the fruit of that grade represent conditions during four seasons only. In these plats there are representative trees of five of the six recognized important strains of the Marsh variety. In plat A, the older trees, there are 19 trees of the Marsh strain, 5 of the Seedy strains, and 1 of the Rough strain. In plat B there are 40 trees of the Marsh strain, 9 of the Alternate-Bearing strain, and 3 of the Unproductive strain. These plats are both located as solid blocks of trees in larger commercial plantings. It is interesting to note that only 76 per cent and 76.9 per cent, respectively, of trees of the Marsh strain were found in the two plats, and approximately the same proportions of typical Marsh trees are found in the two orchards as a whole.

The performance records, descriptions, and illustrations from photographs here presented only partially indicate the characteristics of the various strains. The trees and fruits must be seen and studied personally before their true differences can be fully appreciated and the importance of these variations in commercial fruit growing really understood. On this account the determination of trees from which to secure bud wood for propagation should not be made entirely on the basis of the performance records of the trees. The most reliable selection will be made by a comparative study in the orchard of the performance records of the trees, the habits of growth and appearance of the trees, and the character of the fruit on the trees. Such a selection can be intelligently made only by some one who, through close study and observation of the trees themselves, has gained an intimate knowledge of the interrelation of tree characteristics and crop production.

In Tables III and IV are presented the individual-tree performance records of all the trees in the investigational plats on which data have been secured for the 6-year period. These show the production by weight and number of fruits of each grade and size for each year and the average annual production for the 6-year period both by grades and sizes. The basis of ranking the trees in these tables is their average total annual production expressed in pounds, without regard to the quality or uniformity of the fruit. This arbitrary basis is adopted only because of the impracticability of working out a system to show the actual relative commercial value of each individual tree; hence, the order in which the trees are here listed is not always an indication of their true value, either as fruit producers or as sources of desirable bud wood for propagation.

In expressing the averages of weights in these tables only one decimal place has been retained, and in the figures showing the averages of the number of fruits occurring in different groups no decimal has been retained except where the average is less than unity; hence, it will be found that the totals of averages will sometimes vary slightly from the average of the totals of the corresponding numbers.

Cull fruits were not recorded for the years 1910 and 1911, hence the average production of that grade is not strictly comparable with the averages of the other grades, and the total of the averages of the three grades is not equivalent to the average of the total crops.

Because it is impracticable to assort the culls by sizes, the fruits listed by sizes under the heading ''Total crop'' represent only the total commercial crops, being equal to the total crop exclusive of the culls.

In determining the seed content of fruits on the different trees, counts are made, when possible, of the seeds in a small, a medium, and a large fruit of each of the three grades. In this way a record is secured of the actual number of seeds in nine fruits from each tree, yearly, and it is thought that this system gives a fairly accurate indication of the relative seediness of the fruits of the different trees. Counts were not made on plat B until 1912, and no determinations were made in the Cull grade on either plat until 1914. In 1910, only one fruit of the Ivory-White grade and two fruits of the Standard grade were used for this purpose. In 1911 and 1912, three fruits from the Ivory-White grade and six from the Standard grade were used, and in 1913 three from both the Ivory-White and Standard grades were cut. In 1914 and 1915, three fruits from each of the three grades were examined, when possible. The general average for each year is secured on the basis of the actual number of fruits examined and not from an average of the averages of the different grades. No record of the occurrence of variable fruits was made until 1912. The increase in the number of such fruits recorded during recent years is due to the fact that the observers have gradually become familiar with additional variable forms. Practically all the variable fruits recorded are of minor importance, such as those with ridges, raised or sunken sections, or creases.

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive.*

[The weights of annual production are expressed in pounds and ounces, but the fractional averages are stated decimally in pounds. The cull fruits were not recorded for the first two years, so the average production of that grade is not comparable with the other grades, and the total of the averages of the three grades is not equivalent to the average of the total crops. The fruits listed by sizes under the side heading "Total crop" do not include the Cull grade.]

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
1. Tree No. 1-14-30, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	187- 9	180	15- 5	23	2-15	4	18- 1	21	27-13	30	22-12	23	25- 6	23	75- 5	56	0	......
1911	109- 9	133	50- 7	72	11- 7	14	11- 4	13	10-11	11	12- 5	12	1- 1	1	12- 6	10	2.00	......
1912	369-13	419	48-13	74	36-10	49	56-14	71	63- 5	71	61- 7	63	37- 0	36	65-12	55	1.00	......
1913	149-12	223	59- 0	106	36- 0	51	19- 5	26	14- 3	18	5-15	7	5- 9	6	9-12	9	1.00	......
1914	240-12	277	25- 9	41	42- 1	55	32-12	36	50-10	57	42-11	45	16- 3	16	30-14	27	3.33	......
1915	292-11	335	75- 9	108	33- 8	41	56- 8	64	50- 0	51	30-14	30	17- 0	16	29- 4	25	4.00	......
Average	225.0	261	45.8	71	27.1	36	32.5	39	36.1	40	29.3	30	17.0	16	37.2	30	1.89	......
Standard grade—																		
1910	304- 7	307	32-10	49	15- 9	20	35-11	41	42-12	46	38-10	38	41- 2	37	98- 1	76	0	......
1911	532-11	717	343- 9	511	45- 2	54	54- 7	62	45- 9	48	26- 1	26	9- 9	9	8- 6	7	2.80	......
1912	212- 7	273	69- 9	111	28-10	37	42- 4	51	27-15	31	24- 3	25	8- 7	8	11- 7	10	2.17	......
1913	238- 7	333	182- 1	254	30- 9	46	17- 1	23	3- 6	4	4- 6	5	0- 0	0	1- 0	1	1.33	......
1914	218-12	272	51-15	84	41- 7	53	34- 3	41	37-11	42	23- 6	24	20-11	20	9- 7	8	3.00	......
1915	192- 3	238	77- 4	113	33-10	40	34-14	39	20-15	22	13- 6	13	7- 6	7	4-12	4	3.67	......
Average	283.2	357	126.2	187	32.5	41	36.4	42	29.7	32	21.7	22	14.6	14	22.2	18	2.16	......
Cull fruits—																		
1912	8- 0	19	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	72- 3	193	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	18- 0	54	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2.00	......
1915	21- 4	36	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.33	......
Average	29.9	76	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3.67	......

Total crop—																		
1910	492– 0	487	47–15	72	18– 8	24	53–12	62	70– 9	76	61– 6	61	66– 8	60	173– 6	132	0	....
1911	642– 4	850	394– 0	583	56– 9	68	65–11	75	56– 4	59	38– 6	38	10–10	10	20–12	17	2.50	....
1912	590– 4	711	118– 6	185	65– 4	86	99– 2	122	91– 4	102	85–10	88	45– 7	44	77– 3	65	1.56	2
1913	460– 6	749	241– 1	360	66– 9	97	36– 6	49	17– 9	22	10– 5	12	5– 9	6	10–12	10	1.17	6
1914	477– 8	603	77– 8	125	83– 8	108	66–15	77	88– 5	99	66– 1	69	36–14	36	40– 5	35	2.78	3
1915	506– 2	609	152–13	221	67– 2	81	91– 6	103	70–15	73	44– 4	43	24– 6	23	34– 0	29	4.44	9
Average	**528.1**	**668**	**171.9**	**258**	**59.6**	**77**	**68.9**	**81**	**65.8**	**72**	**51.0**	**52**	**31.6**	**30**	**59.4**	**48**	**2.08**	**5.00**
2. Tree No. 1–16–31, Marsh strain:																		
Ivory-White grade—																		
1910	279– 3	256	10– 4	15	10– 3	13	20–12	24	28– 3	30	36–13	36	45– 1	41	127–15	97	0	....
1911	186– 0	226	79– 0	114	30– 6	36	21– 7	24	16– 2	17	16– 2	16	10– 2	9	12–13	10	.67	....
1912	389–12	494	96– 8	152	58– 9	80	76– 3	94	57–10	67	49–13	51	29– 9	30	21– 8	20	1.67	....
1913	86– 4	111	15– 3	27	12– 4	18	10– 6	14	16– 4	20	11–10	13	5–12	6	14–13	13	.33	....
1914	231–15	285	48–11	76	35– 2	47	34–15	43	51– 9	59	31–14	33	15–15	15	13–13	12	4.33	....
1915	249– 6	289	67– 6	97	33–14	41	55– 6	62	37– 6	39	21– 6	21	17–10	16	16– 6	13	7.33	....
Average	237.1	277	52.8	80	30.1	39	36.5	43	34.5	39	27.9	28	20.6	19	34.5	28	2.39	....
Standard grade—																		
1910	193– 6	176	7– 3	11	7– 6	9	16– 2	18	22– 6	23	21– 4	20	27– 9	25	91–13	70	.50	....
1911	249–13	336	138–12	217	31– 3	37	27– 3	30	16–15	18	21– 8	21	10– 8	10	3–12	3	1.83	....
1912	179– 0	245	73– 8	121	22– 9	30	32–12	40	25–14	29	15– 6	16	7– 0	7	1–15	2	1.83	....
1913	182– 3	271	70– 9	133	30–14	45	21– 8	29	19–10	24	14– 4	16	8– 8	9	16–14	15	2.67	....
1914	146– 0	188	36–10	61	26– 4	34	28– 0	34	27– 7	31	13– 5	14	7–14	8	6– 8	6	3.00	....
1915	93–12	118	42– 2	62	12– 4	15	18– 6	21	6–10	7	6– 4	6	4–10	4	3– 8	3	3.00	....
Average	174.0	222	61.5	101	21.7	29	24.0	29	19.7	22	15.3	16	11.0	11	20.8	16	2.14	....
Cull fruits—																		
1912	5– 6	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	42– 6	107	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	40–12	86	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.67	....
1915	30– 0	32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.67	....
Average	29.6	60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....
Total crop—																		
1910	472– 9	432	17– 7	26	17– 9	22	36–14	42	50– 9	53	58– 1	56	72– 5	66	219–12	167	.33	....
1911	435–13	562	217–12	331	61– 9	73	48–10	54	33– 1	35	37–10	37	20–10	19	16– 9	13	1.44	....
1912	574– 2	752	170– 0	273	81– 2	110	108–15	134	83– 8	96	65– 3	67	36– 9	37	23– 7	22	1.78	0
1913	310–13	489	85–12	160	43– 2	63	31–14	43	35–14	44	25–14	29	14– 4	15	31–11	28	1.50	3
1914	418–11	559	85– 5	137	61– 6	81	62–15	77	79– 0	90	45– 3	47	23–13	23	20– 5	18	3.33	10
1915	373– 2	439	109– 8	159	46– 2	56	73–12	83	44– 0	46	27–10	27	22– 4	20	19–14	16	5.00	2
Average	**430.9**	**539**	**114.3**	**181**	**51.8**	**68**	**60.5**	**72**	**54.3**	**61**	**43.3**	**44**	**31.6**	**30**	**55.3**	**44**	**2.23**	**3.75**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
3. Tree No. 1-15-30, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	232- 2	221	18-13	26	6- 8	8	22- 3	25	29-11	31	35- 7	34	35- 8	32	84- 0	65	0	......
1911	164- 6	198	68-15	97	25-12	31	20- 8	23	21-12	23	11- 7	11	5- 7	5	10- 9	8	3.00	......
1912	308-10	362	50- 6	77	30- 2	40	55- 4	68	55- 6	63	35-12	38	40- 3	40	41- 9	36	1.33	......
1913	167-12	248	83- 4	146	20- 5	29	11-13	16	20- 1	24	12- 8	14	6- 0	6	13-13	13	1.33	......
1914	181- 5	210	30-12	49	16- 8	22	22-10	28	27-12	31	37- 2	38	21- 2	20	25- 7	22	4.00	......
1915	238-11	258	33- 2	47	23- 0	28	44-13	51	39- 5	41	38-15	38	27-15	26	31- 9	27	5.33	......
Average	215.5	250	47.5	74	20.4	26	29.5	35	32.3	35	28.5	29	22.7	22	34.5	29	2.50	......
Standard grade—																		
1910	142- 7	147	19- 8	29	16-10	20	14- 4	16	18- 3	19	15- 9	15	19- 7	17	38-14	31	0	......
1911	382- 2	521	248-12	376	48- 2	57	37-15	42	19-11	21	14- 0	13	8-12	8	4-14	4	3.20	......
1912	224- 6	299	85-11	139	41- 1	53	34- 3	41	30-11	34	10- 4	11	10-15	11	11- 9	10	0.67	......
1913	177- 3	317	117- 6	239	27- 4	39	13-12	18	10-12	13	2-12	3	2- 1	2	3- 4	3	1.00	......
1914	128- 3	151	25-14	42	18- 3	23	17-11	21	19- 8	21	21-12	22	9- 7	9	15-12	13	2.67	......
1915	109- 9	133	39- 0	55	14-12	18	29- 9	33	16- 2	17	6-15	7	1- 0	1	2- 3	2	6.00	......
Average	194.0	261	89.4	146	27.6	35	24.6	29	19.2	21	11.9	12	8.6	8	12.7	10	2.26	......
Cull fruits—																		
1912	5-13	13	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	71- 9	227	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	9-11	26	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.33	......
1915	14-13	24	......	......	......	......	......	......	......	......	......	......	......	......	......	......	6.67	......
Average	25.5	73	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.50	......

Total crop—																		
1910	374- 9	368	38- 5	55	23- 2	28	36- 7	41	47-14	50	51- 0	49	54-15	49	122-14	96	0	.....
1911	546- 8	719	317-11	473	73-14	88	58- 7	65	41- 7	44	25- 7	24	14- 3	13	15- 7	12	3.13	.....
1912	538-13	674	136- 1	216	71- 3	93	89- 7	109	86- 1	97	46- 0	49	51- 2	51	53- 2	46	.89	1
1913	416- 8	792	200-10	385	47- 9	68	25- 9	34	30-13	37	15- 4	17	8- 1	8	17- 1	16	1.17	0
1914	319- 3	387	56-10	91	34-11	45	40- 5	49	47- 4	52	58-14	60	30- 9	29	41- 3	35	3.67	5
1915	363- 1	415	72- 2	102	37-12	46	74- 6	84	55- 7	58	45-14	45	28-15	27	33-12	29	6.00	4
Average	**426.4**	**559**	**136.9**	**220**	**48.0**	**61**	**54.1**	**64**	**51.5**	**56**	**40.4**	**41**	**31.3**	**30**	**47.2**	**39**	**2.48**	**2.50**
4. Tree No. 1-16-30, Marsh strain:																		
Ivory-White grade—																		
1910	335-14	356	49- 2	70	34- 7	43	51- 7	59	52- 8	55	49- 8	48	21- 1	19	77-13	62	1.00	.....
1911	175- 3	193	42- 4	59	28-11	34	20-12	23	22-10	23	19-14	19	24-14	22	16- 2	13	1.33	.....
1912	312-10	389	51- 2	79	43- 6	59	75- 6	96	58- 4	69	40-12	44	21- 6	22	22- 6	20	.33	.....
1913	66- 6	86	14- 8	25	9-11	14	6- 8	9	8- 2	10	8-12	10	10- 4	11	8- 9	7	2.33	.....
1914	217-13	247	31- 2	52	24- 9	32	32-13	39	27-10	31	34-10	35	19-14	19	47- 3	39	2.67	.....
1915	255- 2	283	47- 0	67	39- 6	48	52-12	59	36- 4	37	35-14	35	17-14	16	26- 0	21	2.67	.....
Average	227.2	259	39.2	59	30.0	38	39.9	47	34.2	38	31.6	32	19.2	18	33.0	27	1.72	.....
Standard grade—																		
1910	161- 8	182	34-14	55	19-12	24	26-12	30	20-14	22	15-11	15	9- 0	8	34- 9	38	.50	.....
1911	218- 5	274	93- 1	145	29- 2	34	30- 5	33	32- 1	32	14-14	14	5- 8	5	13- 6	11	2.80	.....
1912	243- 9	343	141-14	222	27- 2	36	34- 7	42	14-14	17	13-14	15	7- 1	7	4- 5	4	2.40	.....
1913	167-11	249	70- 5	130	26- 0	37	13- 8	18	22- 6	27	15- 2	17	13-14	14	6- 8	6	.67	.....
1914	121- 7	149	21- 5	37	15- 9	20	8-13	11	15- 2	23	27- 4	28	18-10	18	14-12	12	2.00	.....
1915	109- 0	131	40- 0	59	14- 2	17	18- 2	20	12- 8	13	11- 2	11	5-10	5	7- 8	6	2.33	.....
Average	170.2	221	66.9	108	22.0	23	22.0	26	19.7	22	16.3	17	10.0	10	13.5	11	1.78	.....
Cull fruits—																		
1912	11- 6	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		.....
1913	54- 4	125	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1914	12-12	43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.67	.....
1915	23- 1	34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.33	.....
Average	25.4	56	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.50	.....
Total crop—																		
1910	497- 6	538	84- 0	125	54- 3	67	78- 3	89	73- 6	77	65- 3	63	30- 1	27	112- 6	90	.67	.....
1911	393- 8	467	135- 5	204	57-13	68	51- 1	56	54-11	55	34-12	33	30- 6	27	29- 8	24	2.25	.....
1912	567- 9	754	193- 0	301	70- 8	95	109-13	138	73- 2	86	54-10	59	28- 7	29	26-11	24	1.63	0
1913	288- 5	460	84-13	155	35-11	51	20- 0	27	30- 8	37	23-14	27	24- 2	25	15- 1	13	1.50	0
1914	352- 0	439	52- 7	89	40- 2	52	41-10	50	42-12	54	61-14	63	38- 8	37	61-15	51	2.44	3
1915	387- 3	448	87- 0	126	53- 8	65	70-14	79	48-12	50	47- 0	46	23- 8	21	33- 8	27	3.11	1
Average	**414.3**	**518**	**106.1**	**167**	**52.0**	**66**	**61.9**	**73**	**53.0**	**60**	**47.9**	**49**	**29.2**	**28**	**46.5**	**38**	**1.93**	**1.00**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
5. Tree No. 1-15-31, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	237- 8	213	9-13	15	7- 3	9	19-15	23	29- 0	29	22- 0	21	24- 2	22	125- 7	94	1.00	....
1911	94- 6	121	45-13	67	15- 5	19	10- 8	12	10-12	12	5- 0	5	2- 4	2	4-12	4	.33	....
1912	308- 0	372	66- 0	97	25-14	35	64- 9	81	51- 5	59	42- 0	45	35- 1	35	23- 3	20	5.00	....
1913	45- 3	58	13- 3	22	3- 7	5	3-12	5	6- 9	8	5- 5	6	5-15	6	7- 0	6	0	....
1914	219- 9	300	56- 5	89	30- 9	41	32- 2	40	42- 0	74	25- 8	26	18- 4	18	14-13	12	2.67	....
1915	149- 9	170	38- 8	57	20- 3	24	26-12	30	23- 9	24	14-14	14	8-13	8	16-14	13	6.00	....
Average	175.7	206	38.3	58	17.1	22	26.3	32	27.2	34	19.1	20	15.7	15	32.0	25	2.50	....
Standard grade—																		
1910	157- 2	157	14-13	23	7- 4	9	17- 6	20	20- 4	22	21- 8	21	19-13	18	56- 2	44	0	....
1911	411-12	570	257- 5	395	53-13	70	24- 7	28	44- 3	47	20- 4	20	4- 7	4	7- 5	6	4.40	....
1912	251- 1	329	87- 7	140	31-11	42	46-11	57	35- 9	40	27-10	29	11- 5	11	10-12	10	4.50	....
1913	177- 6	284	97-13	185	21-15	31	18-10	25	20- 7	24	6- 6	7	10- 3	10	2- 0	2	3.33	....
1914	158- 1	197	37- 4	59	25- 2	33	25-12	32	31- 7	36	17- 8	18	11- 6	11	9-10	8	4.33	....
1915	104- 8	127	44- 0	64	12- 2	14	21- 4	24	11- 4	11	8-10	8	2- 2	2	5- 2	4	5.33	....
Average	210.0	277	89.8	144	25.3	33	25.7	31	27.2	30	17.0	17	9.9	10	15.2	12	3.65	....
Cull fruits—																		
1912	18- 7	38	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	96- 7	243	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	12- 4	43	....	......	....	......	....	......	....	......	....	......	....	......	....	......	6.00	....
1915	13- 4	18	....	......	....	......	....	......	....	......	....	......	....	......	....	......	6.33	....
Average	35.1	86	....	......	....	......	....	......	....	......	....	......	....	......	....	......	6.17	....

Total crop—																		
1910	394–10	370	24–10	38	14– 7	18	37– 5	43	49– 4	51	43– 8	42	43–15	40	181– 9	138	.33	....
1911	506– 2	691	303– 2	462	69– 2	89	34–15	40	54–15	59	25– 4	25	6–11	6	12– 1	10	2.88	....
1912	577– 8	739	153– 7	237	57– 9	77	111– 4	138	86–14	99	69–10	74	46– 6	46	33–15	30	4.67	0
1913	319– 0	585	111– 0	207	25– 6	36	22– 6	30	27– 0	32	11–11	13	16– 2	16	9– 0	8	1.67	0
1914	390– 8	540	93– 9	148	55–11	74	57–14	72	73– 7	110	43– 0	44	29–10	29	24– 7	20	4.43	1
1915	267– 5	315	82– 8	121	32– 5	38	48– 0	54	34–13	35	23– 8	22	10–15	10	22– 0	17	5.89	3
Average	**409.2**	**540**	**128.0**	**202**	**42.4**	**55**	**52.0**	**63**	**54.4**	**64**	**36.1**	**37**	**25.6**	**25**	**47.2**	**37**	**3.32**	**1.00**
6. Tree No. 1-17-30, Marsh strain:																		
Ivory-White grade—																		
1910	277–13	254	18– 1	25	14– 2	17	29– 4	32	27–15	28	30–14	29	49– 8	44	108– 1	79	0	....
1911	291– 3	307	49– 9	68	39– 5	47	46– 7	50	39–15	41	37– 2	35	41– 4	37	37– 9	29	1.00	....
1912	143–13	134	6– 5	9	9– 9	12	13– 8	16	9– 2	10	15–10	16	13– 8	13	76– 3	58	1.33	....
1913	63– 4	83	11–12	20	11–10	17	4–14	7	11–14	15	6– 4	7	9– 4	10	7–10	7	.33	....
1914	271–11	318	47– 2	73	43– 5	56	33–14	41	44– 6	50	34–13	36	29–11	29	38– 8	33	1.67	....
1915	194– 4	202	23–12	33	27– 6	32	43– 7	47	28–15	29	23–10	22	19–14	18	27– 4	21	2.33	....
Average	207.0	216	26.1	38	24.2	30	28.6	32	27.0	29	24.7	24	27.2	25	49.2	38	1.11	....
Standard grade—																		
1910	187– 1	177	23– 6	33	8– 6	10	17– 4	19	27–11	28	20– 7	19	29–10	26	60– 5	42	5.00	....
1911	308– 6	344	80–11	113	43– 8	51	69– 6	74	34–14	35	36– 3	34	11– 5	10	32– 7	27	1.67	....
1912	130– 7	133	18– 6	27	8–14	11	14–13	17	11– 4	12	16–12	17	14– 2	13	46– 4	36	3.50	....
1913	242–13	395	132– 5	252	34–10	51	27– 3	37	18–12	23	18–13	21	7–11	8	3– 7	3	.67	....
1914	122–13	165	51–14	82	19– 4	25	16– 8	20	17– 8	20	10– 3	11	4– 2	4	3– 6	3	2.67	....
1915	59–10	68	16–13	25	4– 2	5	11– 8	13	8–14	9	8– 8	8	2– 4	2	7– 9	6	5.00	....
Average	175.2	214	53.9	89	19.8	26	26.1	30	19.8	21	18.5	18	11.5	11	25.6	19	3.09	....
Cull fruits—																		
1912	4– 0	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	84– 5	213	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	22– 4	56	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.33	....
1915	24– 3	36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.67	....
Average	33.7	78	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.50	....
Total crop—																		
1910	464–14	431	41– 7	58	22– 8	27	46– 8	51	55–10	56	51– 5	48	79– 2	70	168– 6	121	3.75	....
1911	599– 9	651	130– 4	181	82–13	98	115–13	124	74–13	76	73– 5	69	52– 9	47	70– 0	56	1.44	....
1912	278– 4	275	24–11	36	18– 7	23	28– 5	33	20– 6	22	32– 6	33	27–10	26	122– 7	94	2.78	0
1913	390– 6	691	144– 1	272	46– 4	68	32– 1	44	30–10	38	25– 1	28	16–15	18	11– 1	10	.50	0
1914	416–12	539	99– 0	155	62– 9	81	50– 6	61	61–14	70	45– 0	47	33–13	33	41–14	36	3.22	4
1915	278– 1	306	40– 9	58	31– 8	37	54–15	60	37–13	38	32– 2	30	22– 2	20	34–13	27	4.33	0
Average	**404.6**	**482**	**80.0**	**127**	**44.0**	**56**	**54.7**	**62**	**46.8**	**50**	**43.2**	**42**	**38.7**	**36**	**74.8**	**57**	**2.67**	**1.0**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
7. **Tree** No. 1-14-32, Rough strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	287-15	301	30- 5	45	24-11	31	41-10	49	50- 9	54	40-13	39	31-11	29	68- 4	54	0	....
1911	169- 3	195	55-14	76	26-12	33	23- 2	26	21- 1	22	16-13	16	10-11	10	14-14	12	2.00	....
1912	300- 9	404	117- 7	187	43- 4	59	41- 4	52	38- 0	44	32-12	35	20- 4	20	7-10	7	2.33	....
1913	103-14	161	44- 7	82	22- 1	33	14- 4	19	9-10	12	8-13	10	2-12	3	1-15	2	0	....
1914	187- 8	219	20- 7	32	20- 3	27	25- 6	32	34- 6	40	36-15	40	19-12	20	30- 7	28	1.33	....
1915	56- 3	70	26- 4	39	6-10	8	5- 6	6	5- 9	6	4- 2	4	3- 6	3	4-14	4	4.33	....
Average	184.2	225	49.1	77	23.9	32	25.2	31	26.5	30	23.4	24	14.7	14	21.4	18	1.67	....
Standard grade—																		
1910	190- 6	211	31- 3	48	13- 0	16	24- 9	29	38- 0	41	31- 6	31	19-13	18	32- 7	28	.50	....
1911	317- 1	381	120-15	174	53- 8	64	44- 8	49	37-14	39	23- 7	23	18-13	17	18- 0	15	2.40	....
1912	218-12	308	102- 4	169	34- 8	46	32- 3	40	23- 4	27	12-11	13	4-15	5	8-15	8	1.17	....
1913	153- 7	281	118- 0	232	21- 4	31	8- 3	11	4- 1	5	0-14	1	0- 0	0	1- 1	1	2.67	....
1914	162- 9	204	35-11	59	24- 6	32	21-10	27	33-13	39	17-10	19	16- 5	16	13- 2	12	.67	....
1915	182- 6	228	88- 7	128	29- 4	35	26-13	30	19- 8	18	9- 6	9	5- 8	5	3- 8	3	6.33	....
Average	204.1	269	82.8	135	29.3	37	26.3	31	26.1	28	15.9	16	10.9	10	12.8	11	2.29	....
Cull fruits—																		
1912	6- 8	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	56- 0	140	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	15- 0	36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.33	....
1915	19-14	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.33	....
Average	24.3	55	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.33	....

Total crop—																		
1910	478- 5	512	61- 8	93	37-11	47	66- 3	78	88- 9	95	72- 3	70	51- 8	47	100-11	82	.33	....
1911	486- 4	576	176-13	250	80- 4	97	67-10	75	58-15	61	40- 4	39	29- 8	27	32-14	27	2.25	....
1912	525-13	727	219-11	356	77-12	105	73- 7	92	61- 4	71	45- 7	48	25- 3	25	16- 9	15	1.56	....
1913	313- 5	582	162- 7	314	43- 5	64	22- 7	30	13-11	17	9-11	11	2-12	3	3- 0	3	1.33	2
1914	365- 1	459	56- 2	91	44- 9	59	47- 0	59	68- 3	79	54- 9	59	36- 1	36	43- 9	40	1.78	3
1915	258- 7	328	114-11	167	35-14	43	32- 3	36	25- 1	24	13- 8	13	8-14	8	8- 6	7	4.67	2
Average	**404.5**	**531**	**131.9**	**212**	**53.2**	**69**	**51.5**	**62**	**52.6**	**58**	**39.3**	**40**	**25.6**	**24**	**34.2**	**29**	**1.99**	**1.75**
8. **Tree No. 1-14-33, Marsh strain:**																		
Ivory-White grade—																		
1910	307- 4	264	3- 6	5	7- 0	9	9- 9	11	25- 1	27	34- 7	35	23- 2	22	204-11	155	0	....
1911	237- 1	244	29-15	41	31- 0	38	16- 2	18	32-12	34	40- 8	40	38-11	36	48- 1	37	2.67	....
1912	211-15	238	28- 2	44	14- 9	19	24- 2	30	37-14	43	28- 4	30	30- 0	30	49- 0	42	2.33	....
1913	120- 9	197	67- 1	125	27-10	40	9-14	13	8-11	11	4- 8	5	1-14	2	0-15	1	2.00	....
1914	289- 2	419	152-14	252	52- 0	70	29- 3	37	27- 9	32	18- 4	19	4-14	5	4- 6	4	4.00	....
1915	13- 4	17	8- 8	12	0-12	1	0- 0	0	1-13	2	0- 0	0	1- 1	1	1- 2	1	4.00	....
Average	196.5	230	48.3	80	22.2	30	14.8	18	22.3	25	21.0	22	16.6	16	51.4	40	2.50	....
Standard grade—																		
1910	222- 4	214	12- 8	19	8-10	11	19- 7	23	20- 4	22	21-14	22	34- 0	32	105- 9	85	0	....
1911	387-15	462	142- 1	199	71- 0	82	55-13	62	62- 1	65	33- 5	33	17- 9	16	6- 2	5	2.33	....
1912	162- 2	214	62- 9	101	22- 0	29	26- 6	32	19- 0	21	11-13	12	9- 6	9	11- 0	10	2.00	....
1913	140- 0	270	110- 6	229	12-14	19	8-13	12	6- 3	8	0- 0	0	1-12	2	0- 0	0	3.50	....
1914	160- 2	245	91- 0	162	23- 4	31	18- 9	23	15- 3	17	7-15	8	3- 0	3	1- 3	1	2.33	....
1915	20- 3	21	4- 5	5	2- 6	3	2-12	3	0- 0	0	3-14	4	2- 4	2	4-10	4	5.00	....
Average	182.1	238	70.5	119	23.3	29	22.0	26	20.4	22	13.1	13	11.3	11	21.4	18	2.53	....
Cull fruits—																		
1912	1- 6	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	72- 0	197	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	12- 2	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.00	....
1915	3-13	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
Average	22.3	59	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.50	....
Total crop—																		
1910	529- 8	478	15-14	24	15-10	20	29- 0	34	45- 5	49	56- 5	57	57- 2	54	310- 4	240	0	....
1911	625- 0	706	172- 0	240	102- 0	120	71-15	80	94-13	99	73-13	73	56- 4	52	54- 3	42	1.67	....
1912	375- 7	456	90-11	145	36- 9	48	50- 8	62	56-14	64	40- 1	42	39- 6	39	60- 0	52	2.11	3
1913	332- 9	664	177- 7	354	40- 8	59	18-11	25	14-14	19	4- 8	5	3-10	4	0-15	1	2.60	0
1914	461- 6	694	243-14	414	75- 4	101	47-12	60	42-12	49	26- 3	27	7-14	8	5- 9	5	4.11	1
1915	37- 4	43	12-13	17	3- 2	4	2-12	3	1-13	2	3-14	4	3- 5	3	5-12	5	4.50	0
Average	**393.5**	**507**	**118.8**	**199**	**45.5**	**59**	**36.8**	**44**	**42.7**	**47**	**34.1**	**35**	**27.9**	**27**	**72.8**	**58**	**2.50**	**1.0**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
9. Tree No. 1-18—30, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	315- 8	242	4- 5	6	4- 1	5	7- 0	8	12- 6	13	21-11	21	22- 8	20	243- 9	169	0	....
1911	418- 4	295	4- 0	7	3-15	5	14-13	16	23-10	24	27- 3	26	20- 0	18	324-11	199	2.00	....
1912	76- 5	73	2- 1	3	0-12	1	3- 2	4	1-12	2	6- 4	7	9- 6	9	53- 0	47	1.00	....
1913	114- 3	144	11-10	21	19-10	29	15-14	22	17- 1	22	7- 3	9	11- 0	12	31-13	29	.33	....
1914	357-11	434	73- 9	112	63-12	85	47- 0	57	62- 8	72	48-15	51	27-12	27	34- 3	30	2.67	....
1915	194- 7	189	14- 4	20	11-11	14	25- 2	28	20-14	22	30- 8	29	27- 6	25	64-10	51	5.00	....
Average	246.1	230	18.3	28	17.3	23	18.8	23	23.0	26	23.6	24	19.7	19	125.3	87	1.83	....
Standard grade—																		
1910	175- 7	157	10- 1	15	7-14	10	10-13	12	14- 7	15	26-12	25	18- 9	16	86-15	64	1.00	....
1911	121- 4	107	7-12	11	2-10	3	4- 6	5	12-12	13	13-12	13	9-13	9	70- 3	53	2.67	....
1912	52-15	52	4- 2	6	0-12	1	7- 7	9	4-12	5	4-12	5	5- 4	5	25-14	21	3.50	....
1913	180- 0	281	81- 7	153	20- 9	31	23- 9	33	21- 0	27	17- 3	20	23- 9	8	9- 8	9	2.00	....
1914	179-10	231	54- 5	86	34- 7	45	25- 8	31	31- 9	36	13- 9	14	10-14	11	9- 6	8	4.33	....
1915	62-14	64	8- 0	11	3- 4	4	11-12	13	7-12	8	10- 4	10	6- 6	6	15- 8	12	4.00	....
Average	128.7	149	27.6	47	11.6	16	13.9	17	15.4	17	14.4	14	9.6	9	36.2	28	2.92	....
Cull fruits—																		
1912	2- 1	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	65- 3	313	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	22-13	59	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.33	....
1915	12-13	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.00	....
Average	25.7	98	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.17	....

Total crop—																		
1910	490–15	399	14– 6	21	11–15	15	17–13	20	26–13	28	48– 7	46	41– 1	36	330– 8	233	.67	....
1911	539– 8	402	11–12	18	6– 9	8	19– 3	21	36– 6	37	40–15	39	29–13	27	394–14	252	2.44	....
1912	131– 5	129	6– 3	9	1– 8	2	10– 9	13	6– 8	7	11– 0	12	14–10	14	78–14	68	2.67	0
1913	359– 6	738	93– 1	174	40– 3	60	39– 7	55	38– 1	49	24– 6	29	17–12	20	41– 5	38	1.17	1
1914	560– 2	724	127–14	198	98– 3	130	72– 8	88	94– 1	108	62– 8	65	38–10	38	43– 9	38	3.11	2
1915	270– 2	270	22– 4	31	14–15	18	36–14	41	28–10	30	40–12	39	33–12	31	80– 2	63	5.00	4
Average	**391.9**	**444**	**45.9**	**75**	**28.9**	**39**	**32.7**	**40**	**38.4**	**43**	**38.0**	**38**	**29.3**	**28**	**161.5**	**115**	**2.51**	**1.75**
10. Tree No. 1-17—33, Marsh strain:																		
Ivory-White grade—																		
1910	265– 5	215	1–15	3	1–12	2	7– 4	8	10–11	11	11– 2	11	27–14	26	204–11	154	1.00	....
1911	418– 8	410	34– 0	45	34–14	42	49–15	56	45–10	48	52–12	55	58–15	54	142– 6	110	1.00	....
1912	146– 2	162	20– 8	31	8– 6	11	21– 7	26	22–11	27	17– 8	18	20–10	20	35– 0	29	2.67	....
1913	68– 2	98	23– 1	42	10–10	16	10–15	15	5– 0	6	6–12	8	2–10	3	9– 2	8	0	....
1914	381– 8	534	175–13	289	65– 0	87	56–15	70	40–14	46	25–14	27	4– 2	4	13– 8	11	3.33	....
1915	76– 2	93	22–10	36	8–14	11	15– 0	17	12–12	13	9–14	10	2– 4	2	4–12	4	6.33	....
Average	225.9	252	46.3	74	21.6	28	26.9	32	22.9	25	20.6	21	19.4	18	68.1	53	2.39	....
Standard grade—																		
1910	109–14	98	6– 7	9	7– 8	9	5– 8	6	9–11	10	6– 3	6	14–14	13	59–11	45	4.00	....
1911	240–15	263	55– 5	80	24– 6	29	37– 6	41	28–12	29	32– 2	31	24–10	23	38– 6	30	3.50	....
1912	103– 5	121	19–15	34	8– 3	11	15–15	19	14– 8	16	9– 0	9	9– 6	9	26– 6	23	2.83	....
1913	225–15	385	145–15	278	37–15	54	13–14	19	13– 6	17	11–14	14	0–15	1	2– 0	2	2.33	....
1914	119–11	168	46–12	80	29– 7	40	12–15	16	15–14	18	6– 8	7	2– 4	2	5–15	5	1.00	....
1915	19– 1	22	6–14	10	1–10	2	0– 0	0	1–14	2	3– 0	3	4– 5	4	1– 6	1	6.00	....
Average	136.5	176	46.9	82	18.2	24	14.3	17	14.0	15	11.4	12	9.4	9	22.3	17	3.28	....
Cull fruits—																		
1912	12– 1	21	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	143– 0	411	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	14– 7	32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.67	....
1915	7– 2	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.00	....
Average	44.2	120	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.34	....
Total crop—																		
1910	375– 3	313	8– 6	12	9– 4	11	12–12	14	20– 6	21	17– 5	17	42–12	39	264– 6	199	3.00	....
1911	659– 7	673	89– 5	125	59– 4	71	87– 5	97	74– 6	77	84–14	86	83– 9	77	180–12	140	2.67	....
1912	261– 8	304	40– 7	65	16– 9	22	37– 6	45	37– 3	43	26– 8	27	30– 0	29	61– 6	52	2.78	0
1913	437– 1	894	169– 0	320	48– 9	70	24–13	34	18– 6	23	18–10	22	3– 9	4	11– 2	10	1–17	0
1914	515–10	734	222– 9	369	94– 7	127	69–14	86	56– 2	64	32– 6	34	6– 6	6	19– 7	16	3.67	3
1915	102– 5	129	29– 8	46	10– 8	13	15– 0	17	14–10	15	12–14	13	6– 9	6	6– 2	5	5.44	1
Average	**391.9**	**508**	**93.2**	**156**	**39.8**	**52**	**41.2**	**49**	**36.9**	**41**	**32.1**	**33**	**28.8**	**27**	**90.5**	**70**	**3.12**	**1.00**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Var ia- ble fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
11. Tree No. 1–18—29, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	294–12	233	1– 8	2	3– 5	4	7–14	9	13– 7	14	16– 2	16	21– 3	19	231– 5	169	0.	......
1911	382– 7	292	5– 4	7	7– 6	9	18– 4	20	25– 3	26	36– 0	35	34–10	31	255–12	164	2.33	......
1912	152–10	144	2–12	4	4– 6	6	9–14	12	14– 0	16	15– 4	16	14– 6	14	92– 0	76	1.67	......
1913	79– 4	101	10–11	19	8– 8	13	9–10	13	19– 3	24	10– 6	12	9– 7	10	11– 7	10	0.	......
1914	296– 0	373	64– 3	102	57–11	77	48– 6	60	51–14	60	26–15	29	23–13	24	23– 2	21	3.33	......
1915	212– 3	191	9– 1	12	6– 0	7	20– 8	23	18–10	19	23–14	23	27–12	25	106– 6	82	2.67	......
Average	236.2	222	15.6	24	14.5	19	19.1	23	23.7	26	21.4	22	21.9	21	120.0	87	1.67	......
Standard grade—																		
1910	149– 4	126	7– 1	10	3–15	5	4– 7	5	8– 0	8	15–13	15	16– 2	14	93–14	69	3.00	......
1911	121– 4	117	11– 1	16	9–10	12	5– 5	6	17–10	18	7– 3	7	18–12	17	51–11	41	3.00	......
1912	70–14	72	6–15	10	4–13	6	5– 4	6	4– 7	5	11–12	12	7– 3	7	30– 8	26	3.00	......
1913	204–10	311	54– 3	106	45–11	69	34– 6	47	29–10	38	11– 5	13	16– 7	18	13– 0	20	1.67	......
1914	162– 8	216	56– 3	92	20– 8	28	23– 9	29	31– 2	36	17– 9	19	4–15	5	8–10	7	3.00	......
1915	69– 7	68	9– 2	13	3– 5	4	7– 2	8	7–13	8	6– 5	6	10–10	9	25–12	20	4.00	......
Average	129.7	152	24.1	42	14.7	21	13.3	17	16.5	19	11.6	12	12.3	11	37.2	31	2.95	......
Cull fruits—																		
1912	2– 0	4	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	68–12	162	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	11–12	38	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1.00	......
1915	14–12	20	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3.33	......
Average	24.3	56	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2.17	......

Total crop—																		
1910	444- 0	359	8- 9	12	7- 4	9	12- 5	14	21- 7	22	31-15	31	37- 5	33	325- 3	238	2.00	......
1911	503-11	409	16- 5	23	17- 0	21	23- 9	26	42-13	44	43- 3	42	53- 6	48	307- 7	205	2.78	......
1912	225- 8	220	9-11	14	9- 3	12	15- 2	18	18- 7	21	27- 0	28	21- 9	21	122- 8	102	2.56	0
1913	352-10	574	64-14	125	54- 3	82	44- 0	60	48-13	62	21-11	25	25-14	28	24- 7	30	.83	0
1914	470- 4	627	120- 6	194	78- 3	105	71-15	89	83- 0	96	44- 8	48	28-12	29	31-12	28	2.44	8
1915	296- 6	279	18- 3	25	9- 5	11	27-10	31	26- 7	27	30- 3	29	37-12	34	132- 2	102	3.33	1
Average	**382.1**	**411**	**39.7**	**66**	**29.2**	**40**	**32.4**	**40**	**40.2**	**45**	**33.1**	**34**	**34.1**	**32**	**157.2**	**118**	**3.49**	**2.25**
12. Tree No. 1-16-32, Marsh strain:																		
Ivory-White grade—																		
1910	266- 4	229	5- 8	8	0-12	1	15-12	18	24- 7	26	27-10	27	33- 3	30	159- 0	119	1.00	......
1911	165-14	230	100-14	155	21-12	27	10- 2	12	17-14	21	11- 0	11	3- 2	3	1- 2	1	2.00	......
1912	331-14	430	103- 6	161	42- 2	58	59- 2	75	52- 3	60	37- 4	40	20-11	21	17- 2	15	1.33	......
1913	65- 9	85	16-14	29	6- 2	9	6-14	9	10-11	13	8- 8	9	9-14	10	6-10	6	.67	......
1914	212- 3	244	16-12	27	22-12	31	32- 1	40	48-14	56	42-10	44	22- 3	22	26-15	24	2.67	......
1915	166-10	194	56-12	80	26- 8	32	23- 6	26	20- 8	21	16-15	16	11- 6	10	11- 3	9	4.33	......
Average	201.4	235	50.0	77	20.0	26	24.6	30	29.1	33	24.0	25	16.8	16	37.0	29	2.00	......
Standard grade—																		
1910	151- 6	129	8-12	14	2- 6	3	6-13	8	14- 6	15	18- 7	18	18-14	17	61-12	54	0	......
1911	315-11	458	217- 9	348	35- 3	43	26- 8	30	19-10	21	10- 2	10	5-11	5	1- 0	1	.80	......
1912	201- 0	288	109-10	178	29-13	39	24-12	31	25- 5	28	7- 8	8	1-14	2	2- 2	2	2.40	......
1913	153-11	249	83-13	161	25-14	36	14-14	19	14- 3	17	7-15	9	3-12	4	3- 4	3	1.33	......
1914	106-13	132	17- 1	29	22- 0	29	13-12	17	24-14	28	11-10	12	14- 3	14	3- 5	3	3.33	......
1915	75-11	93	37- 8	55	4-10	5	17- 8	19	2-15	3	4- 6	4	3- 6	3	5- 6	4	5.67	......
Average	164.0	225	79.1	131	20.0	26	17.3	21	16.9	19	10.0	10	8.0	8	12.8	11	2.26	......
Cull fruits—																		
1912	7- 3	16	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	47-15	105	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	9- 0	30	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3.00	......
1915	16- 2	27	......	......	......	......	......	......	......	......	......	......	......	......	......	......	7.00	......
Average	20.1	45	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.00	......
Total crop—																		
1910	397-10	358	14- 4	22	3- 2	4	22- 9	26	38-13	41	46- 1	45	52- 1	47	220-12	173	.33	......
1911	481- 9	688	318- 7	503	56-15	70	36-10	42	37- 8	42	21- 2	21	8-13	8	2- 2	2	1.25	......
1912	540- 1	734	213- 0	339	71-15	97	83-14	106	77- 8	88	44-12	48	22- 9	23	19- 4	17	2.00	0
1913	267- 3	439	100-11	190	32- 0	45	21-12	28	24-14	30	16- 7	18	13-10	14	9-14	9	1.00	2
1914	328- 0	406	33-13	56	44-12	60	45-13	57	73-12	84	54- 4	56	36- 6	36	30- 4	27	3.00	3
1915	258- 7	314	94- 4	135	31- 2	37	40-14	45	23- 7	24	21- 5	20	14-12	13	16- 9	13	5.50	0
Average	**378.8**	**490**	**129.1**	**208**	**40.0**	**52**	**41.9**	**51**	**46.0**	**52**	**34.0**	**35**	**24.7**	**24**	**49.8**	**40**	**2.18**	**1.25**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
13. **Tree No. 1-18-32,** Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	246- 9	221	9- 4	13	6- 8	8	17-15	20	19- 5	20	24-12	24	34-15	32	133-14	104	0	
1911	384- 3	393	37- 5	51	42- 5	50	58-10	65	47-11	49	64- 5	63	49- 2	45	84-13	70	1.67	
1912	149-15	159	12-11	19	8- 3	11	21-12	26	19- 0	21	15- 4	19	21-13	21	51- 4	42	2.33	
1913	45-10	63	8-13	16	9- 4	14	6- 9	9	8- 8	11	3-10	4	5-12	6	3- 2	3	0	
1914	223-14	286	59- 8	94	34- 8	46	42- 6	53	38- 6	44	20-15	22	16- 5	16	11-14	11	4.67	
1915	224-14	238	32-12	46	28-12	34	46- 2	51	31-14	33	23-14	23	22- 0	20	39- 8	31	3.00	
Average	212.5	227	26.7	40	21.6	27	32.2	37	27.5	30	25.5	26	25.0	23	54.1	44	1.95	
Standard grade—																		
1910	179- 9	172	18- 6	27	6-15	8	18- 1	20	20- 9	21	26- 2	25	14- 0	13	75- 8	58	1.00	
1911	136-13	144	18- 7	28	18- 3	21	17-11	19	18- 7	19	21-15	21	20- 5	18	21-13	18	2.33	
1912	114- 8	127	23- 3	35	8- 9	11	16- 4	19	12-10	14	9- 6	10	7- 2	7	37- 6	31	2.50	
1913	181- 6	290	80- 7	154	34- 0	51	19- 5	27	23-11	31	12- 8	15	5- 8	6	5-15	6	.33	
1914	146-12	201	62-10	103	21-15	29	17- 1	21	20- 1	23	15- 7	16	7- 6	7	2- 4	2	4.33	
1915	66-14	73	10-10	16	7- 6	9	11- 9	13	7-14	8	11- 3	11	8- 8	8	9-12	8	4.33	
Average	137.6	168	35.6	60	16.2	22	16.7	20	17.2	19	16.1	16	10.5	10	25.4	20	2.47	
Cull fruits—																		
1912	2-14	6																
1913	95- 8	214																
1914	43- 8	72															1.67	
1915	19- 8	22															3.00	
Average	40.3	79															2.35	

Total crop—																		
1910	426- 2	393	27-10	40	13- 7	16	36- 0	40	39-14	41	50-14	49	48-15	45	209- 6	162	.67	....
1911	521- 0	537	55-12	79	60- 8	71	76- 5	84	66- 2	68	86- 4	84	69- 7	63	106-10	88	2.11	....
1912	267- 5	294	35-14	54	16-12	22	38- 0	45	31-10	35	24-10	29	28-15	28	88-10	73	2.44	2
1913	322- 8	567	89- 4	170	43- 4	65	25-14	36	32- 3	42	16- 2	19	11- 4	12	9- 1	9	.17	0
1914	414- 2	559	122- 2	197	56- 7	75	59- 7	74	58- 7	67	36- 6	38	23-11	23	14- 2	13	3.56	1
1915	311- 4	333	43- 6	62	36- 2	43	57-11	64	39-12	41	35- 1	34	30- 8	24	49- 4	39	3.44	0
Average	**377.1**	**447**	**62.3**	**100**	**37.8**	**49**	**48.9**	**57**	**44.7**	**49**	**41.6**	**42**	**35.5**	**33**	**79.5**	**64**	**2.07**	**0.75**
14. Tree No. 1-16-29, Marsh strain:																		
Ivory-White grade—																		
1910	243-11	237	14- 2	21	11-10	15	22-15	26	31-10	33	31- 5	31	47- 9	44	84- 8	67	0	....
1911	185-15	205	34- 2	47	27- 7	33	38- 0	43	20- 4	21	22- 8	22	21-10	20	22- 0	19	1.33	....
1912	296- 0	337	34-10	55	22-12	30	46- 6	57	49- 7	57	37- 9	41	40- 2	41	65- 2	56	1.33	....
1913	48-14	69	10-15	20	11-10	17	6-12	9	9- 7	12	4- 4	5	3-12	4	2- 2	2	.33	....
1914	261- 0	307	31- 2	50	33-14	45	49-13	61	66- 6	74	29- 1	30	29- 2	28	21-10	19	3.33	....
1915	121-12	119	11- 0	15	3- 2	4	15- 6	17	18- 8	19	17- 6	17	15- 6	14	41- 0	33	3.00	....
Average	192.9	212	22.7	35	18.4	24	29.9	36	32.6	36	23.7	24	26.3	25	39.4	33	1.55	....
Standard grade—																		
1910	117- 4	113	3-13	7	4- 0	5	17- 6	19	12- 9	13	14- 1	14	18-12	17	46-11	38	0	....
1911	246- 0	288	78-13	114	40- 0	48	36- 7	40	30- 0	31	23- 6	23	16- 4	15	21- 2	17	1.50	....
1912	142- 6	174	29- 5	48	24-13	33	21- 3	26	17- 0	19	15- 6	16	13- 4	13	21- 7	19	2.67	....
1913	206- 9	344	115- 1	226	31-10	46	20- 7	27	19-13	24	9-11	11	2- 5	3	7-10	7	4.33	....
1914	160- 5	197	24-15	43	24-11	33	22- 0	27	46-10	52	20-14	22	13- 9	13	7-10	7	2.67	....
1915	69-11	74	15-12	23	6- 4	8	7- 2	8	6- 0	6	10- 4	10	8-12	6	15- 9	13	2.33	....
Average	157.0	198	44.6	77	21.9	29	20.7	24	22.0	24	15.6	16	12.1	11	20.0	17	2.25	....
Cull fruits—																		
1912	4- 3	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	53-10	142	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	11-12	36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.67	....
1915	14- 5	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.00	....
Average	21.0	51	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.34	....
Total crop—																		
1910	360-15	350	17-15	28	15-10	20	40- 5	45	44- 3	46	45- 6	45	66- 5	61	131- 3	105	0	....
1911	431-15	493	112-15	161	67- 7	81	74- 7	83	50- 4	52	45-14	45	37-14	35	43- 2	36	1.44	....
1912	442- 9	519	63-15	103	47- 9	63	67- 9	83	66- 7	76	52-15	57	53- 6	54	86- 9	75	2.22	0
1913	309- 1	555	126- 0	246	43- 4	63	27- 3	36	29- 4	36	13-15	16	6- 1	7	9-12	9	2.33	1
1914	433- 1	540	56- 1	93	58- 9	78	71-13	88	113- 0	126	49-15	52	42-11	41	29- 4	26	3.56	4
1915	205-12	209	26-12	38	9- 6	12	22- 8	25	24- 8	25	27-10	27	24- 2	20	56- 9	46	3.78	2
Average	**363.9**	**444**	**67.3**	**112**	**40.3**	**53**	**50.6**	**60**	**54.6**	**60**	**39.3**	**40**	**38.4**	**36**	**59.4**	**50**	**2.22**	**1.75**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
15. Tree No. 1-17-29, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	187- 9	159	3- 4	5	7- 9	9	11-13	13	17- 1	17	23-11	22	31-14	27	92- 5	66	....	....
1911	273- 6	323	91- 0	130	49- 6	59	36- 7	41	38- 8	41	26-15	26	9- 8	9	21-10	17	2.33	....
1912	182- 8	161	2-12	4	8-10	11	9- 6	11	8- 4	9	16-10	17	17-11	17	119- 3	92	1.33	....
1913	44- 5	63	14-11	27	7-14	12	4- 6	6	4-14	6	4- 6	5	1-14	2	6- 4	5	1.33	....
1914	274- 6	333	53- 2	81	43-15	58	44-10	55	47-14	55	45-14	48	20- 8	20	18- 7	16	3.67	....
1915	165- 4	148	8- 6	12	6-14	8	13-12	15	20- 4	20	19-14	18	18-10	16	77- 8	59	2.67	....
Average	187.9	198	28.9	43	20.7	26	20.1	24	22.8	21	22.9	23	16.7	15	55.8	43	1.89	....
Standard grade—																		
1910	118-15	101	8- 9	13	4-13	6	10-14	12	4-14	5	7- 5	7	20-15	18	61- 9	43	.50	....
1911	251- 7	314	118- 0	170	32- 2	38	40- 0	44	40- 7	42	13- 2	13	3- 4	3	4- 8	4	.80	....
1912	129- 7	136	13- 6	21	9- 8	12	18- 7	22	14- 2	15	14-15	15	24- 9	23	34- 8	28	1.50	....
1913	215- 8	356	119- 5	228	36-15	54	20- 4	27	27- 2	34	7- 0	8	3-12	4	1- 2	1	.67	....
1914	137-15	181	51- 8	82	16- 7	22	16- 8	20	23-12	27	17- 4	18	6- 0	6	6- 8	6	4.67	....
1915	68- 8	66	9- 8	13	6- 3	7	6- 4	7	7- 0	7	9-12	9	3- 5	3	26- 8	20	2.00	....
Average	153.6	193	53.4	88	17.7	23	18.7	22	19.6	22	11.6	11	10.3	10	22.4	17	1.69	....
Cull fruits—																		
1912	8- 4	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	54-10	127	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	17-14	51	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.00	....
1915	12- 6	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....
Average	23.3	51	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.17	....

Total crop—																		
1910	306- 8	263	11-13	18	12- 6	15	22-11	25	21-15	22	31- 0	29	52-13	45	153-14	109	.33	....
1911	524-13	637	209- 0	300	81- 8	97	76- 7	85	78-15	83	40- 1	39	12-12	12	26- 2	21	1.38	....
1912	320- 3	309	16- 2	25	18- 2	23	27-13	33	22- 6	24	31- 9	32	42- 4	40	153-11	120	1.44	0
1913	314- 7	546	134- 0	255	44-13	66	24-10	33	32- 0	40	11- 6	13	5-10	6	7- 6	6	1.00	0
1914	430- 3	565	104-10	163	60- 6	80	61- 2	75	71-10	82	63- 2	66	26- 8	26	24-15	22	3.44	5
1915	246- 2	229	17-14	25	13- 1	15	20- 0	22	27- 4	27	29-10	27	21-15	19	104- 0	79	3.00	2
Average	**357.0**	**425**	**82.2**	**131**	**38.4**	**49**	**38.8**	**46**	**42.4**	**46**	**34.5**	**34**	**27.0**	**25**	**18.3**	**60**	**1.77**	**1.75**
16. Tree No. 1-17-31, Marsh strain:																		
Ivory-White grade—																		
1910	243-14	203	3- 9	5	2- 7	3	6- 3	7	12- 7	13	15- 7	15	27- 5	25	176- 8	135	3.00	....
1911	267- 3	241	6- 5	9	11-11	14	21-11	24	24-15	26	29- 6	29	24-12	23	148- 7	116	3.00	....
1912	307- 2	327	20- 0	31	13- 5	18	33-10	43	36- 4	43	38- 6	41	46- 2	47	119- 7	104	1.00	....
1913	45- 6	54	2-13	5	3-15	6	6- 9	9	10- 5	13	4- 5	5	4-13	5	12-10	11	1.33	....
1914	345-12	449	98- 7	154	70- 0	93	49- 8	62	64-15	75	27- 8	30	18-12	19	16-10	16	1.67	....
1915	80-14	91	23- 2	32	7-10	9	14- 0	16	11-12	12	9- 6	9	9- 2	8	5-14	5	5.00	....
Average	215.0	228	25.7	39	18.2	24	21.9	27	26.8	31	20.7	22	21.8	21	79.9	65	2.50	....
Standard grade—																		
1910	129- 9	111	5-14	9	1-11	2	5- 5	6	11-10	12	6- 1	6	17-12	16	81- 4	60	1.00	....
1911	129- 0	128	12-15	19	6- 7	8	14- 0	15	19-10	20	11-12	11	16- 2	15	48- 2	40	1.50	....
1912	134- 2	145	9- 0	15	9- 8	13	15- 6	19	17- 9	20	20- 4	22	12-10	13	49-13	43	1.67	....
1913	183-10	250	45- 4	81	27- 8	41	16- 8	23	31- 7	40	19-12	23	14- 2	15	29- 1	27	1.00	....
1914	111- 3	153	43-13	72	19- 5	26	16- 7	20	18-12	22	5- 8	6	3-14	4	3- 8	3	2.67	....
1915	24- 3	27	8- 2	11	2- 8	3	2-11	3	2- 2	2	4- 0	4	0- 0	0	4-12	4	2.67	....
Average	118.6	136	20.8	35	11.1	15	11.7	14	16.8	19	11.2	12	10.8	11	36.1	29	1.75	....
Cull fruits—																		
1912	2-12	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	69- 7	141	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	21- 3	53	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....
1915	13-12	22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.67	....
Average	26.8	56	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.17	....
Total crop—																		
1910	373- 7	314	9- 7	14	4- 2	5	11- 8	13	24- 1	25	21- 8	21	45- 1	41	257-12	195	1.00	....
1911	396- 3	369	19- 4	28	18- 2	22	35-11	39	44- 9	46	41- 2	40	40-14	38	196- 9	156	2.00	....
1912	444- 0	479	29- 0	46	22-13	31	49- 0	62	53-13	63	58-10	63	58-12	60	169- 4	147	1.44	3
1913	298- 7	445	48- 1	86	31- 7	47	23- 1	32	41-12	53	24- 1	28	18-15	20	41-11	38	2.33	7
1914	478- 2	655	142- 4	226	89- 5	119	65-15	82	83-11	97	33- 0	36	22-10	23	20- 2	19	2.89	3
1915	118-13	140	31- 4	43	10- 2	12	16-11	19	13-14	14	13- 6	13	9- 2	8	10-10	9	3.44	3
Average	**351.5**	**400**	**46.5**	**74**	**29.3**	**39**	**33.6**	**41**	**43.6**	**50**	**31.9**	**34**	**32.6**	**32**	**116.0**	**94**	**2.18**	**4.00**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
17. Tree No. 1-17-32, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	208- 9	207	23-12	35	7-14	10	20-11	24	23- 8	25	30-14	30	30-12	28	71- 2	55	0	......
1911	228-10	262	65-12	93	45-13	52	35- 6	40	27-13	29	21- 7	21	13- 7	12	19- 0	15	2.67	......
1912	260- 8	294	33- 4	53	27- 2	36	26- 9	33	37-14	43	40- 8	43	31- 5	31	63-14	55	2.00	......
1913	87-11	121	26-10	45	15- 2	22	15- 4	20	10- 8	13	10-12	12	2-15	3	6- 8	6	2.00	......
1914	239-13	298	58- 7	88	41- 2	54	32- 9	40	44- 6	53	28- 7	30	14-14	15	20- 0	18	2.67	......
1915	180- 5	196	43-10	60	21-14	26	26-14	29	21-10	22	22-12	22	16-12	15	26-13	22	4.33	......
Average	200.9	230	41.9	63	26.5	33	26.2	31	27.6	31	25.8	26	18.4	18	34.6	29	2.28	......
Standard grade—																		
1910	114-11	124	17-11	26	12-12	16	15-11	18	14-15	16	20- 4	20	9-12	9	23-10	19	0	......
1911	189- 7	239	90-15	131	35- 3	42	32- 1	35	15- 2	16	7- 0	7	3- 5	3	5-13	5	1.80	......
1912	127-11	168	47-11	79	15-14	21	18- 0	22	13- 7	15	10- 4	11	5- 1	5	17- 6	15	2.17	......
1913	204-10	330	106- 2	200	34-11	51	26- 0	35	20-14	26	8- 1	9	6-12	7	2- 2	2	.67	......
1914	122-10	165	51- 4	82	19-13	26	15-10	19	14- 1	16	10- 6	11	5- 0	5	6- 8	6	3.00	......
1915	32- 4	38	12- 3	17	3- 6	4	1-14	2	5- 6	6	5- 1	5	3- 4	3	1- 2	1	2.00	......
Average	131.9	177	54.3	89	20.3	27	18.2	22	14.0	16	10.2	11	5.5	5	9.4	8	1.61	......
Cull fruits—																		
1912	5- 9	13	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	39-12	97	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	10- 6	21	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.67	......
1915	4- 4	7	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2.00	......
Average	15.0	35	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3.34	......

Total crop—																		
1910	323- 4	331	41- 7	61	20-10	26	36- 6	42	38- 7	41	51- 2	50	40- 8	37	94-12	74	0	....
1911	418- 1	501	156-11	224	81- 0	94	67- 7	75	42-15	45	28- 7	28	16-12	15	24-13	20	2.13	....
1912	393-12	475	80-15	132	43- 0	57	44- 9	55	51- 5	58	50-12	54	36- 6	36	81- 4	70	2.11	0
1913	332- 1	548	132-12	245	49-13	73	41- 4	55	31- 6	39	18-13	21	9-11	10	8-10	8	1.33	0
1914	372-13	484	109-11	170	60-15	80	48- 3	59	58- 7	69	38-13	41	19-14	20	26- 8	24	3.44	4
1915	216-13	241	55-13	77	25- 4	30	28-12	31	27- 0	28	27-13	27	20- 0	18	27-15	23	3.00	3
Average	**342.8**	**430**	**96.2**	**152**	**46.8**	**60**	**44.4**	**53**	**41.6**	**47**	**36.0**	**37**	**23.9**	**23**	**44.0**	**37**	**2.00**	**1.75**
18. Tree No. 1-16-33 Marsh strain: Ivory-White grade—																		
1910	213-11	157	0- 0	0	0- 0	0	0-14	1	2-15	3	13- 7	13	13- 0	12	183- 7	128	0	....
1911	329- 9	351	38-13	55	35- 0	44	56-13	66	48-11	51	42-12	43	43-12	41	63-12	51	2.00	....
1912	200- 7	206	9- 0	13	12-12	17	22- 8	26	28- 0	32	26-12	28	23- 0	23	78- 7	67	.33	....
1913	12-14	16	2-13	5	4-12	4	2-12	4	1-11	2	0-14	1	0- 0	0	0- 0	0	3.50	....
1914	231- 9	285	44-14	72	36-14	50	39- 0	48	42- 0	48	30- 9	32	19-14	19	18- 6	16	4.00	....
1915	43-10	45	6-12	10	3- 4	4	9- 0	10	4- 0	4	3- 2	3	4- 8	4	13- 0	10	4.33	....
Average	172.0	177	17.1	26	15.4	20	21.8	26	21.2	26	19.6	20	17.3	17	59.5	45	2.36	....
Standard grade—																		
1910	126- 1	99	2-12	4	2- 8	3	0-14	1	2- 0	2	7- 3	7	12- 0	11	98-12	71	1.67	....
1911	249-10	287	52- 0	76	49- 5	61	52-15	59	33- 6	35	20- 5	20	17- 6	16	24- 5	20	3.17	....
1912	172- 6	196	21- 0	34	11-12	16	27-10	33	19-12	22	29- 8	30	22-15	22	39-13	39	1.17	....
1913	192-10	355	124-13	264	31- 5	46	13-13	18	18- 2	22	3- 8	4	1- 1	1	0- 0	0	2.00	....
1914	114-13	146	29-11	49	16- 2	22	16- 2	20	20- 6	23	14- 6	15	10- 4	10	7-14	7	1.00	....
1915	21-14	18	1- 8	2	0- 0	0	1-12	2	2- 0	2	3- 6	3	2- 4	2	11- 0	7	3.00	....
Average	146.2	184	38.6	71	18.5	25	18.9	22	15.9	18	13.0	13	11.0	10	30.3	24	2.00	....
Cull fruits—																		
1912	6- 0	11	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	82- 5	237	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	11- 1	24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.67	....
1915	13- 4	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.67	....
Average	28.2	72	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.17	....
Total crop—																		
1910	339-12	256	2-12	4	2- 8	3	1-12	2	4-15	5	20-10	20	25- 0	23	282- 3	199	1.25	....
1911	579- 3	638	90-13	131	84- 5	105	109-12	125	82- 1	86	63- 1	63	61- 2	57	88- 1	71	2.78	....
1912	378-13	413	30- 0	47	24- 8	33	50- 2	59	47-12	54	56- 4	58	45-15	45	118- 4	106	.89	0
1913	287-13	608	127-10	269	36- 1	50	16- 9	22	19-13	24	4- 6	5	1- 1	1	0- 0	0	2.75	0
1914	357- 7	455	74- 9	121	53- 0	72	55- 2	68	62- 6	71	44-15	47	30- 2	29	26- 4	23	2.56	5
1915	78-12	77	8- 4	12	3- 4	4	10-12	12	6- 0	6	6- 8	6	6-12	6	24- 0	17	4.33	0
Average	**337.0**	**408**	**55.7**	**97**	**33.9**	**45**	**40.7**	**48**	**37.2**	**41**	**32.6**	**33**	**28.3**	**27**	**89.8**	**69**	**2.43**	**1.25**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
19. Tree No. 1-15-32, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	177- 2	204	47- 4	69	16- 0	20	30- 9	36	22- 6	24	19- 3	19	14- 1	13	27-11	23	0	....
1911	148- 2	186	77- 5	112	12- 6	15	13-15	16	18- 3	19	13- 9	13	3- 6	3	9- 6	8	1.33	....
1912	276- 0	367	79- 9	130	47- 8	65	48- 0	61	47- 5	56	24- 9	27	15- 1	15	14- 0	13	1.33	....
1913	50- 2	70	12- 7	23	7- 8	11	8- 1	11	6-10	8	7-14	9	5-11	6	1-15	2	.33	....
1914	57- 6	77	23-15	37	11- 4	15	7- 5	9	7- 1	8	5-11	6	1- 0	1	1- 2	1	5.33	....
1915	112-12	150	69- 1	103	6-11	8	13- 4	15	10- 8	11	10- 0	10	2- 2	2	1- 2	1	2.67	....
Average	136.9	176	51.6	79	16.9	22	20.2	25	18.7	21	13.5	14	6.9	7	9.2	8	1.83	....
Standard grade—																		
1910	118-13	145	33- 4	54	16- 4	21	19-14	23	12-14	14	10- 1	10	14- 4	13	12- 4	10	.50	....
1911	139- 9	190	84-14	132	11- 0	12	22- 6	25	8- 8	9	8- 9	8	2- 2	2	2- 2	2	4.00	....
1912	150- 3	214	74-11	122	30- 1	40	17- 0	21	14- 0	16	7- 7	8	5-14	6	1- 2	1	2.40	....
1913	137- 0	266	110-12	229	15- 5	23	3-10	5	4-12	6	2- 9	3	0- 0	0	0- 0	0	2.00	....
1914	141-10	204	77- 8	128	23- 2	30	14-12	18	13- 8	15	7- 8	8	4- 2	4	1- 2	1	5.00	....
1915	133- 7	182	83- 8	125	19-10	24	17- 7	20	7-11	8	1-14	2	2- 3	2	1- 2	1	5.00	....
Average	136.8	200	77.4	132	19.2	25	15.8	18	10.2	11	6.3	7	4.7	4	3.0	3	3.15	....
Cull fruits—																		
1912	1- 2	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	50- 4	133	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	23-12	60	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.67	....
1915	19- 8	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.00	....
Average	23.6	59	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.84	....

otal crop—																		
1910	295-15	349	80- 8	123	32- 4	41	50- 7	59	35- 4	38	29- 4	29	28- 5	26	39-15	33	.33	....
1911	287-11	376	162- 3	244	23- 6	27	36- 5	41	26-11	28	22- 2	21	5- 8	5	11- 8	10	2.86	....
1912	427- 5	586	154- 4	252	77- 9	105	65- 0	82	61- 5	72	32- 0	35	20-15	21	15- 2	14	2.00	0
1913	237- 6	469	123- 3	252	22-13	34	11-11	16	11- 6	14	10- 7	12	5-11	6	1-15	2	1.00	0
1914	222-12	341	101- 7	165	34- 6	45	22- 1	27	20- 9	23	13- 3	14	5- 2	5	2- 4	2	4.33	5
1915	265-11	370	152- 9	228	26- 5	32	30-11	35	18- 3	19	11-14	12	4- 5	4	2- 4	2	3.63	5
Average	**289.5**	**415**	**129.0**	**211**	**36.1**	**47**	**36.0**	**43**	**28.9**	**32**	**19.8**	**21**	**11.6**	**11**	**12.2**	**11**	**2.36**	**2.50**
20. Tree No. 1-18-33, Marsh strain:																		
Ivory-White grade—																		
1910	188- 3	150	5-12	8	4- 0	5	6- 2	7	9- 9	10	9- 2	9	11- 0	10	142-10	101	0	....
1911	383-12	445	110- 1	155	71-10	87	62-14	71	55- 0	56	38-10	37	24- 1	22	21- 8	17	1.33	....
1912	20-10	25	4-13	8	2- 8	3	3- 4	4	0-14	1	3-14	4	4- 4	4	1- 1	1	5.00	....
1913	37-14	61	15- 1	29	8- 3	13	5- 9	8	3-14	5	2- 7	3	1-12	2	1- 0	1	0	....
1914	215-15	273	94-11	127	31- 0	42	34-10	44	23- 2	27	20- 0	21	8- 1	8	4- 7	4	4.00	....
1915	125- 8	149	46- 2	68	7- 4	9	18- 4	21	20- 4	21	11- 6	11	12- 6	11	9-14	8	4.00	....
Average	162.0	184	46.1	66	20.8	27	21.8	26	18.8	20	14.2	14	10.2	9	30.1	22	2.39	....
Standard grade—																		
1910	138-14	123	6- 8	10	7- 2	9	14-14	17	6-10	7	8-14	9	18- 3	17	76-11	54	1.00	....
1911	90- 3	115	37-13	56	22- 2	27	18-14	21	4-12	5	2- 0	2	2- 3	2	2- 7	2	1.33	....
1912	13- 9	14	2-11	4	0- 0	0	1-12	2	0-14	1	2-14	3	0- 0	0	5- 6	4	3.20	....
1913	138-11	258	95- 9	196	21- 2	33	13- 8	19	3- 2	4	2- 9	3	1-13	2	1- 0	1	0	....
1914	86- 3	134	45-12	83	13-11	19	16-14	21	5- 2	6	4-12	5	0- 0	0	0- 0	0	3.00	....
1915	29- 9	37	10- 1	16	1-10	2	7-12	9	6- 8	7	1- 1	1	1- 2	1	1- 7	1	4.67	....
Average	82.8	114	33.0	61	10.9	15	12.3	15	4.5	5	3.7	4	3.9	4	14.5	10	2.20	....
Cull fruits—																		
1912	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	132- 3	384	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	22- 0	49	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.67	....
1915	11- 2	21	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.00	....
Average	41.3	113	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.36	....
Total crop—																		
1910	327- 1	273	12- 4	18	11- 2	14	21- 0	24	16- 3	17	18- 0	18	29- 3	27	219- 5	155	.67	....
1911	473-15	560	147-14	211	93-12	114	81-12	92	59-12	61	40-10	39	26- 4	24	23-15	19	1.56	....
1912	34- 3	39	7- 8	12	2- 8	3	5- 0	6	1-12	2	6-12	7	4- 4	4	6- 7	5	3.44	0
1913	308-12	703	110-10	225	29- 5	46	19- 1	27	7- 0	9	5- 0	6	3- 9	4	2- 0	2	0	0
1914	324- 2	456	140- 7	210	44-11	61	51- 8	65	28- 4	33	24-12	26	8- 1	8	4- 7	4	4.22	4
1915	166- 3	207	56- 3	84	8-14	11	26- 0	30	26-12	28	12- 7	12	13- 8	12	11- 5	9	4.22	2
Average	**272.4**	**373**	**79.1**	**127**	**31.7**	**42**	**34.1**	**41**	**23.3**	**25**	**17.9**	**18**	**14.1**	**13**	**44.6**	**32**	**2.35**	**1.50**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
21. Tree No. 1-14-29, Rough Seedy strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	14- 4	9	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	14- 4	9	54.00	....
1911	100-10	107	21- 4	28	11- 3	13	11-13	13	22-10	23	10-11	10	11- 4	10	11-13	10	52.00	....
1912	19- 2	15	0- 0	0	0- 0	0	0-14	1	0-15	1	3- 2	3	2- 3	2	12- 0	8	66.00	....
1913	84- 3	135	43- 0	78	14- 4	22	11-15	17	10- 2	13	2-12	3	1- 2	1	1- 0	1	37.33	....
1914	83- 6	87	5-13	9	5- 1	7	7- 3	9	13-15	16	7- 9	8	12- 6	12	31- 7	26	47.33	....
1915	35- 2	37	8-11	11	2-11	3	7- 9	8	7- 0	7	5- 7	5	1- 2	1	2-10	2	62.33	....
Average	56.1	65	13.1	21	5.5	8	6.6	8	9.1	10	4.9	5	4.7	4	12.2	9	53.17	....
Standard grade—																		
1910	41-10	26	0- 0	0	0- 0	0	0- 0	0	0- 0	0	1- 0	1	1- 1	1	39-9	24	49.50	....
1911	379-11	444	152- 9	205	67- 0	77	57- 2	61	47-11	50	29-12	29	12- 0	11	13-9	11	50.40	....
1912	75- 9	51	0-11	1	0-13	1	4- 2	5	1-15	2	3- 2	3	2- 4	2	62-10	37	51.40	....
1913	186- 0	308	112- 2	206	42- 7	62	16- 8	22	10- 6	13	0-13	1	3-12	4	0-0	0	43.00	....
1914	181-13	124	9-14	16	11-13	15	4- 4	5	18-10	21	21- 3	22	22-0	21	94-1	24	52.67	....
1915	113- 4	109	11-14	16	7- 3	8	14-15	16	18- 2	18	19-10	18	16-6	14	25-2	19	61.33	....
Average	163.0	177	47.9	74	21.6	27	16.1	18	16.1	17	12.6	12	9.6	9	39.1	19	51.38	....
Cull fruits—																		
1912	4-11	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	86- 8	175	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	16- 6	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	45.50	....
1915	72-13	85	....	....	....	....	....	....	....	....	....	....	....	....	....	....	57.67	....
Average	45.1	68	....	....	....	....	....	....	....	....	....	....	....	....	....	....	51.59	....

Total crop—																		
1910	55-14	35	0-0	0	0-0	0	0-0	0	0-0	0	1-0	1	1-1	1	53-13	33	51.00	....
1911	480-5	551	173-13	233	78-3	90	68-15	74	70-5	73	40-7	39	23-4	21	25-6	21	51.00	....
1912	99-6	72	0-11	1	0-13	1	5-0	6	2-14	3	6-4	6	4-7	4	74-10	45	55.77	0
1913	356-11	618	155-2	284	56-11	84	28-7	39	20-8	26	3-9	4	4-14	4	1-0	1	39.60	0
1914	281-9	218	15-11	25	16-14	22	11-7	14	32-9	37	28-12	30	34-6	33	125-8	50	48.63	2
1915	221-3	231	20-9	27	9-14	11	22-8	24	25-2	25	25-1	23	17-8	15	27-12	21	60.44	5
Average	**249.2**	**288**	**61.0**	**95**	**27.1**	**35**	**22.7**	**26**	**25.2**	**27**	**17.5**	**17**	**14.3**	**13**	**51.3**	**29**	**51.07**	**1.75**
22. Tree No. 1-14-31, Rough Seedy strain:																		
Ivory-White grade—																		
1910	14-7	14	2-10	4	1-8	2	1-9	2	1-12	2	0-0	0	0-0	0	7-0	4	50.00	....
1911	108-0	109	17-15	24	14-12	17	10-4	11	5-0	5	15-8	15	17-9	16	27-0	21	54.67	....
1912	21-15	17	0-11	1	0-0	0	0-0	0	0-0	0	2-2	2	5-4	5	13-14	9	55.00	....
1913	121-14	200	59-5	112	32-14	49	13-13	19	13-6	17	0-12	1	1-12	2	0-0	0	45.50	....
1914	35-1	34	2-2	3	3-0	4	1-10	2	3-10	4	3-0	3	5-5	5	16-6	13	58.33	....
1915	35-8	39	11-0	14	5-6	6	5-10	6	8-0	8	2-2	2	2-4	2	1-2	1	57.00	....
Average	56.1	69	15.6	27	9.6	13	5.5	7	5.3	6	3.9	4	5.4	.5	10.9	8	53.42	....
Standard grade—																		
1910	20-3	13	0-0	0	0-0	0	0-0	0	0-0	0	0-0	0	2-4	2	17-15	11	62.00	....
1911	309-9	339	80-2	111	41-2	47	40-9	43	46-12	47	33-5	32	28-9	26	39-2	33	47.17	....
1912	144-11	96	0-12	1	0-0	0	3-8	4	1-0	1	5-4	5	5-9	5	128-10	80	29.00	....
1913	118-0	221	88-7	179	19-0	28	6-9	9	4-0	5	0-0	0	0-0	0	0-0	0	40.00	....
1914	169-11	157	6-2	10	4-7	6	4-6	5	20-1	22	24-5	25	19-3	18	91-3	71	48.00	....
1915	205-1	219	43-8	61	18-8	21	36-3	39	37-6	37	31-2	29	14-8	13	23-14	19	53.33	....
Average	161.2	174	36.5	60	13.8	17	15.2	16	18.2	19	15.7	15	11.6	11	50.1	36	46.58	....
Cull fruits—																		
1912	0-14	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	58-3	134	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	3-6	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	51.33	....
1915	30-7	43	....	....	....	....	....	....	....	....	....	....	....	....	....	....	56.00	....
Average	23.2	46	....	....	....	....	....	....	....	....	....	....	....	....	....	....	53.67	....
Total crop—																		
1910	34-10	27	2-10	4	1-8	2	1-9	2	1-12	2	0-0	0	2-4	2	24-15	15	58.00	....
1911	417-9	448	98-1	135	55-14	64	50-13	54	51-12	52	48-13	47	46-2	42	66-2	54	49.67	....
1912	167-8	114	1-7	2	0-0	0	3-8	4	1-0	1	7-6	7	10-13	10	142-8	89	38.75	0
1913	298-1	555	147-12	291	51-14	77	20-6	28	17-6	22	0-12	1	1-12	2	0-0	0	42.75	0
1914	208-2	196	8-4	13	7-7	10	6-0	7	23-11	26	27-5	28	24-8	23	107-9	84	52.56	2
1915	271-0	301	54-8	75	23-14	27	41-13	45	45-6	45	33-4	31	16-12	16	25-0	20	55.44	9
Average	**232.8**	**274**	**52.1**	**87**	**23.4**	**30**	**20.7**	**23**	**23.5**	**25**	**19.6**	**19**	**17.0**	**16**	**61.0**	**44**	**49.53**	**2.75**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.			
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Seeds per fruit.	Variable fruits.
23. Tree No. 1-18-31, Smooth Seedy strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	11- 7	6	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	11- 7	6	42.00	....
1911	322- 0	316	11- 3	15	27-11	33	59- 0	63	52- 2	53	61-15	56	61-12	56	48- 5	40	46.33	....
1912	14- 8	14	2-10	4	0- 0	0	1-10	2	0- 0	0	0- 3	1	2- 3	2	7-14	5	61.33	....
1913	40- 5	60	9- 7	17	9-11	15	9- 2	13	6-10	9	1-11	2	0-13	1	2-15	3	31.67	....
1914	210- 9	223	7-14	12	20-15	27	31-15	38	40- 0	44	29- 9	30	35-11	34	44- 9	38	50.67	....
1915	59- 2	45	0- 0	0	0- 0	0	0-14	1	0- 0	0	9-10	9	5-14	5	42-12	30	56.00	....
Average	109.7	111	5.2	8	9.7	12	17.1	20	16.4	18	17.2	16	17.7	16	26.3	20	48.00	....
Standard grade—																		
1910	31- 8	17	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	31- 8	17	43.00	....
1911	166-12	171	11-13	16	15-12	18	37-15	40	28-12	29	35- 1	35	20-13	19	16-10	14	45.60	....
1912	41- 7	27	1- 3	2	0- 0	0	0- 0	0	0- 0	0	0-15	1	1- 2	1	38- 3	23	46.60	....
1913	176- 1	256	46-10	87	37- 9	57	16- 4	23	29-14	39	16- 3	20	19- 9	21	9- 6	9	45.67	....
1914	122-13	132	14-12	23	10-13	14	18- 6	22	18-10	20	9- 9	10	11- 9	11	39- 2	32	50.00	....
1915	31- 6	24	0- 0	0	0- 0	0	0-12	1	0- 0	0	3- 2	3	4- 8	4	23- 0	16	63.00	....
Average	95.0	105	12.4	21	10.7	15	12.2	14	12.9	14	10.8	12	9.6	10	26.3	19	48.98	....
Cull fruits—																		
1912	0- 0	0	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	89- 0	168	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	5- 8	10	....	......	....	......	....	......	....	......	....	......	....	......	....	......	50.00	....
1915	11-12	17	....	......	....	......	....	......	....	......	....	......	....	......	....	......	57.00	....
Average	26.6	48	....	......	....	......	....	......	....	......	....	......	....	......	....	......	53.50	....

Total crop—																			
1910	42–15	23	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	12–15	23	42.67	....
1911	488–12	487	23– 0	31	43– 7	51	96–15	103	80–14	82	97– 0	91	82– 9	75	64–15	54	45.88	....
1912	55–15	41	3–13	6	0– 0	0	1–10	2	0– 0	0	1– 2	2	3– 5	3	46– 1	28	52.13	0
1913	305–6	484	56– 1	104	47– 4	72	25– 6	36	36– 8	48	18– 8	22	20– 6	22	12– 5	12	38.67	0
1914	338–14	365	22–10	35	31–12	41	50– 5	60	58–10	64	39– 2	40	47– 4	45	83–11	70	50.22	1
1915	102– 4	86	0– 0	0	0– 0	0	1–10	2	0– 0	0	12–12	12	10– 6	9	65–12	46	58.67	1
Average	**222.4**	**248**	**17.6**	**29**	**20.4**	**27**	**29.3**	**34**	**29.3**	**32**	**28.1**	**28**	**27.3**	**26**	**52.6**	**39**	**48.04**	**0.5**
24. Tree No. 1-15-33, Rough Seedy strain:																			
Ivory-White grade—																			
1910	7– 9	5	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	1– 3	1	6– 6	4	90.00	....
1911	257–11	268	34– 4	44	33– 1	38	35– 2	38	68–11	70	26–15	26	32–13	30	26–13	22	61.00	....
1912	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0	....
1913	20– 1	32	9–12	18	3– 6	5	3–12	5	2– 5	3	0–14	1	0– 0	0	0– 0	0	49.50	....
1914	35– 1	34	1– 4	2	0–12	1	1–12	2	8– 4	9	5–15	6	0– 0	0	17– 2	14	55.00	....
1915	16–11	18	3– 1	5	0– 0	0	0– 0	0	2–13	3	5– 5	5	4– 6	4	1– 2	1	60.00	....
Average	56.2	60	8.0	11	6.2	7	6.8	8	13.7	14	6.5	6	6.4	6	8.6	7	52.58	....
Standard grade—																			
1910	29– 7	15	0– 0	0	0– 0	0	0–13	1	0– 0	0	0– 0	0	0– 0	0	28–10	14	63.00	....
1911	270– 6	301	78–11	106	47–12	54	52–15	55	30–15	31	30– 2	29	18–10	17	11– 5	9	52.50	....
1912	64– 1	40	0– 0	0	0– 0	0	0– 0	0	2– 3	2	0– 0	0	0– 0	0	61–14	38	66.50	....
1913	116–14	229	102– 3	195	4– 7	21	4– 8	6	4– 0	5	1–12	2	0– 0	0	0– 0	0	37.50	....
1914	139–11	118	5–10	8	3–14	5	6– 0	7	8– 6	9	12– 0	12	24– 4	23	79– 9	54	44.00	....
1915	78– 6	75	9– 9	13	5–13	7	8– 8	9	7–12	8	6– 4	6	11– 6	10	29– 2	22	60.00	....
Average	116.5	130	32.7	54	10.3	15	12.1	13	8.9	9	8.4	8	9.0	8	35.1	23	53.92	....
Cull fruits—																			
1912	6– 2	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	134–10	342	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	44– 1	39	....	....	....	....	....	....	....	....	....	....	....	....	....	....	54.00	....
1915	68–12	81	....	....	....	....	....	....	....	....	....	....	....	....	....	....	64.67	....
Average	63.4	117	....	....	....	....	....	....	....	....	....	....	....	....	....	....	59.34	....
Total crop—																			
1910	37– 0	20	0– 0	0	0– 0	0	0–13	1	0– 0	0	0– 0	0	1– 3	1	35– 0	18	72.00	....
1911	528– 1	569	112–15	150	80–13	92	88– 1	93	99–10	101	57– 1	55	51– 7	47	38– 2	31	55.33	....
1912	70– 3	45	0– 0	0	0– 0	0	0– 0	0	2– 3	2	0– 0	0	0– 0	0	61–14	38	66.50	0
1913	271– 9	603	111–15	213	7–13	26	8– 4	11	6– 5	8	2–10	3	0– 0	0	0– 0	0	43.50	0
1914	218–13	191	6–14	10	4–10	6	7–12	9	16–10	18	17–15	18	24– 4	23	96–11	68	51.00	1
1915	163–13	174	12–10	18	5–13	7	8– 8	9	10– 9	11	11– 9	11	15–12	14	30– 4	23	61.56	7
Average	**214.9**	**267**	**40.7**	**65**	**16.5**	**22**	**18.9**	**21**	**22.6**	**23**	**14.9**	**14**	**15.4**	**14**	**43.7**	**30**	**58.32**	**2.0**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT A, PLANTED IN 1898—Continued.

Rank, tree No., strain, grade, and year.	Sizes. Total. Weight.	Total. Number.	112 and smaller. Weight.	112 and smaller. Number.	96 Weight.	96 Number.	80 Weight.	80 Number.	64 Weight.	64 Number.	48 Weight.	48 Number.	32 Weight.	32 Number.	24 and larger. Weight.	24 and larger. Number.	Number of— Seeds per fruit.	Number of— Variable fruits.
25. Tree No. 1-15-29, Rough seedy strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	22–12	18	0– 0	0	0– 0	0	0–14	1	1–14	2	1– 0	1	2– 1	2	16–15	12	57.00	....
1911	137– 2	152	39– 7	53	23–10	27	19– 5	21	16–13	17	18–14	18	5–11	5	13– 6	11	50.00	....
1912	21– 9	20	0–11	1	0– 0	0	0– 0	0	3–14	4	1–14	2	3– 2	3	12– 0	10	60.67	....
1913	24– 9	40	13– 6	25	5– 7	8	2– 4	3	0–14	1	2–10	3	0– 0	0	0– 0	0	36.00	....
1914	88– 4	95	6– 5	9	9– 8	12	15–15	19	18– 2	20	17– 5	17	7–11	7	13– 6	11	60.33	....
1915	44–10	43	6–10	9	2– 8	3	8– 8	9	7– 6	7	2– 1	2	3– 7	3	14– 2	10	56.00	....
Average	56.5	61	11.1	16	6.8	8	7.8	9	8.1	9	7.3	7	3.7	3	11.6	9	53.33	....
Standard grade—																		
1910	3– 6	2	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	0– 0	0	3– 6	2	49.50	....
1911	219–10	244	59– 1	81	34– 1	38	40– 3	43	32–15	33	28–11	27	17–13	16	6–14	6	48.75	....
1912	133– 7	109	0–11	1	3– 4	4	9–11	11	7–10	8	6–15	7	16– 9	15	88–11	63	45.80	....
1913	160– 0	267	99–10	184	33–13	50	12– 2	16	9– 1	11	3– 8	4	1–14	2	0– 0	0	41.50	....
1914	122– 5	132	13–11	20	9– 6	12	11– 4	13	14–12	16	12– 2	12	14–14	14	46– 4	45	40.00	....
1915	113– 7	101	9–14	13	6–14	8	11– 6	12	7– 5	7	15– 4	14	9–10	8	53– 2	39	58.33	....
Average	125.4	143	30.5	50	14.6	19	14.1	16	12.0	12	11.1	11	10.1	9	33.1	26	47.31	....
Cull fruits—																		
1912	3– 5	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	53– 8	116	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	1– 7	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	58.00	....
1915	25–10	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	54.67	....
Average	21.0	39	....	....	....	....	....	....	....	....	....	....	....	....	....	....	56.35	....

Total crop—																	
1910	26-2	20	0-0	0	0-0	0	0-14	1	1-14	2	1-0	1	2-1	2	20-5	14	52.00	....
1911	356-12	396	98-8	134	57-11	65	59-8	64	49-12	50	47-9	45	23-8	21	20-4	17	49.28	....
1912	158-5	133	1-6	2	3-4	4	9-11	11	11-8	12	8-13	9	19-11	18	100-11	73	51.38	0
1913	238-1	423	113-0	209	39-4	58	14-6	19	9-15	12	6-2	7	1-14	2	0-0	0	38.75	2
1914	212-0	230	20-0	29	18-14	24	27-3	32	32-14	36	29-7	29	22-9	21	59-10	56	51.28	2
1915	183-11	177	16-8	22	9-6	11	19-14	21	14-11	14	17-5	16	13-1	11	67-4	49	56.33	4
Average	**195.8**	**230**	**41.6**	**66**	**21.4**	**27**	**21.9**	**25**	**20.1**	**21**	**18.4**	**18**	**13.8**	**12**	**44.7**	**35**	**49.84**	**2.0**

Investigational Performance Record, Plat B, Planted in the Autumn of 1903.

1. Tree No. 23-59-13, Marsh strain:																	
Ivory-White grade—																	
1910	171-6	219	54-13	82	25-2	33	34-6	42	28-0	32	12-13	14	5-5	6	10-15	10	....	....
1911	221-3	178	2-9	4	2-8	3	3-7	4	4-7	5	11-1	11	31-9	28	165-10	123	....	....
1912	212-7	273	54-1	87	33-15	46	43-6	54	28-11	33	26-5	28	12-15	13	13-2	12	1.67	....
1913	143-0	165	14-1	23	26-0	33	23-12	28	32-12	36	22-12	23	15-13	15	7-14	7	1.67	....
1914	77-12	109	43-12	68	14-11	19	12-10	15	3-10	4	2-1	2	1-0	1	0-0	0	5.67	....
1915	128-15	158	49-14	74	20-0	25	25-11	28	10-14	11	9-11	9	8-0	7	4-13	4	2.33	....
Average	159.1	184	36.5	56	20.4	27	23.9	29	18.1	20	14.1	15	12.4	11	33.8	26	2.84	....
Standard grade—																	
1910	80-12	110	26-5	42	9-0	12	20-6	26	16-9	20	6-8	8	2-0	2	0-0	0	....	....
1911	63-12	61	3-5	7	2-6	3	5-10	6	7-15	8	4-13	5	11-2	10	28-9	22	....	....
1912	108-7	139	32-15	52	17-10	23	19-15	24	16-0	18	12-5	13	2-15	3	6-11	6	3.00	....
1913	60-3	80	18-3	33	12-12	16	6-0	7	15-11	17	2-1	2	4-6	4	1-2	1	1.33	....
1914	51-11	82	35-2	61	10-10	14	3-5	4	1-12	2	0-14	1	0-0	0	0-0	0	4.33	....
1915	63-2	77	21-3	34	8-12	10	12-2	13	6-0	6	10-7	10	3-7	3	1-3	1	5.67	....
Average	71.3	92	22.8	38	10.2	13	11.2	13	10.7	12	6.2	6	4.0	4	6.2	5	3.58	....
Cull fruits—																	
1912	8-4	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	13-8	52	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	18-12	41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.00	....
1915	17-7	34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
Average	14.5	35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.00	....
Total crop—																	
1910	252-2	329	81-2	124	34-2	45	54-12	68	44-9	52	19-5	22	7-5	8	10-15	10	....	....
1911	284-15	239	5-14	11	4-14	6	9-1	10	12-6	13	15-14	16	42-11	38	194-3	145	....	....
1912	329-2	425	87-0	139	51-9	69	63-5	78	44-11	51	38-10	41	15-14	16	19-13	18	2.56	1
1913	216-11	297	32-4	56	38-12	49	29-12	35	48-7	53	24-13	25	20-3	19	9-0	8	1.50	0
1914	148-3	232	78-14	128	25-5	33	15-15	19	5-6	6	2-15	3	1-0	1	0-0	0	4.33	2
1915	209-8	269	71-1	108	28-12	35	37-13	41	16-14	17	20-2	14	11-7	10	6-0	5	4.33	1
Average	**240.1**	**299**	**59.3**	**94**	**30.6**	**40**	**35.1**	**42**	**28.7**	**32**	**20.3**	**21**	**16.4**	**15**	**40.0**	**31**	**3.18**	**1.00**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
2. Tree No. 23-59-5, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	172- 1	223	55- 5	84	26- 0	35	33- 5	41	25-13	30	16- 6	18	7-13	8	7- 7	7	....	....
1911	184-14	159	4- 2	6	2- 8	3	7- 2	8	8-10	9	18- 2	18	18- 2	17	126- 4	98	....	....
1912	159-12	184	14- 8	23	13- 5	18	29-11	37	18-11	22	24- 1	26	31- 9	32	27-15	26	1.33	....
1913	154-15	168	7-15	12	11- 0	14	18- 2	22	36- 8	41	34-15	36	22- 4	22	24- 3	21	0	....
1914	80- 5	102	29-15	45	15- 0	19	14-10	17	12- 4	13	5- 2	5	3- 6	3	0- 0	0	6.00	....
1915	88- 5	98	11- 0	15	9-14	12	22- 0	25	15-14	19	16- 5	16	5-10	5	7-10	6	5.00	
Average	140.0	156	20.6	31	12.9	17	20.8	25	19.6	22	19.2	20	14.8	15	32.2	27	3.08	....
Standard grade—																		
1910	44- 6	64	20- 5	33	5-12	8	9-14	13	3-14	5	1-11	2	0-14	1	2- 0	2	....	....
1911	73-10	73	6- 6	9	2- 7	3	8- 0	9	7-10	8	13- 5	13	18-10	17	17- 4	14	....	....
1912	102- 7	124	19- 8	30	12- 1	16	21- 8	26	17-12	20	12-15	14	10- 2	10	8- 9	8	2.33	....
1913	68- 4	81	13- 4	20	8- 2	10	14- 7	17	17-11	20	6-13	7	3- 1	3	4-14	4	2.67	....
1914	110-13	149	48-12	75	32- 6	41	15- 4	18	10- 4	11	2- 2	2	2- 1	2	0- 0	0	3.67	....
1915	59-10	64	9-10	13	8- 8	10	13- 5	14	13-10	14	7- 6	7	3- 7	3	3-12	3	3.67	....
Average	76.5	93	19.5	30	11.1	15	13.7	16	11.9	13	7.3	7	6.3	6	6.1	5	3.08	....
Cull fruits—																		
1912	7-10	11	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	11- 8	39	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	17-13	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....
1915	5-14	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....
Average	10.7	22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....

Total crop—																		
1910	216– 7	287	75–10	117	31–12	43	43– 3	54	29–11	35	18– 1	20	8–11	9	9– 7	9	....	....
1911	258– 8	232	10– 8	15	4–15	6	15– 2	17	16–14	17	31– 7	31	36–12	34	143– 8	112	....	....
1912	269–13	319	34– 0	53	25– 6	34	51– 3	63	36– 7	42	37– 0	40	41–11	42	36– 8	34	2.00	0
1913	234–11	288	21– 3	32	19– 2	24	32– 9	39	54– 3	61	41–12	43	25– 5	25	29– 1	25	1.33	2
1914	208–15	281	78–11	120	47– 6	60	29–14	35	22– 8	24	7– 4	7	5– 7	5	0– 0	0	4.67	7
1915	153–13	171	20–10	28	18– 6	22	35– 5	39	29– 8	33	23–11	23	9– 1	8	11– 6	9	4.33	4
Average	**223.7**	**263**	**40.1**	**61**	**24.5**	**32**	**34.5**	**41**	**31.5**	**35**	**26.5**	**27**	**21.1**	**21**	**38.3**	**32**	**3.08**	**3.25**
3. Tree No. 23–59–11, Marsh strain:																		
Ivory-White grade—																		
1910	132– 2	167	29– 6	46	12– 5	17	19–10	25	33– 9	39	17– 0	19	11– 4	12	9– 0	9	....	....
1911	159– 8	117	1–11	3	0–12	1	2– 9	3	3– 0	3	4– 4	4	5–10	5	141–10	98	....	....
1912	211– 7	300	86– 1	135	24– 1	47	44– 8	56	24– 4	28	19– 8	21	9–12	10	3– 5	3	3.00	....
1913	175–10	175	7– 1	11	7–14	10	10– 1	12	26–10	29	28– 7	29	33–13	32	61–12	52	.33	....
1914	88–13	119	39–12	60	16– 4	21	16– 7	20	12– 9	14	2–12	3	1– 1	1	0– 0	0	4.33	....
1915	91–15	85	4– 7	6	4–14	6	8– 2	9	9–14	10	12– 9	12	19– 8	17	31–15	25	4.00	....
Average	143.2	161	28.0	44	11.0	17	16.9	21	18.3	21	14.0	15	13.5	13	41.3	31	1.94	....
Standard grade—																		
1910	83–15	112	20– 0	33	9–13	14	15–11	21	20– 2	24	13– 2	15	4– 1	4	1– 2	1	....	....
1911	23–10	20	0– 0	0	0–10	1	2–11	3	1–15	2	2– 3	2	2– 4	2	13–15	10	....	....
1912	106–14	146	40–15	69	17– 5	23	22–12	27	9– 4	10	9– 5	10	5– 3	5	2– 2	2	3.20	....
1913	56–11	67	8– 7	18	5–11	7	5– 4	6	7– 2	8	9– 0	9	6– 5	6	14–14	13	1.00	....
1914	59–11	88	38– 3	61	10–10	14	4–10	5	6–14	8	0– 0	0	0– 0	0	0– 0	0	5.33	....
1915	46– 2	45	3–15	6	2–12	3	4– 9	5	8– 2	8	7– 7	7	5–11	5	13–10	11	4.33	....
Average	62.8	80	18.6	31	7.8	10	9.3	11	8.9	10	6.8	7	3.9	4	7.6	6	3.46	....
Cull fruits—																		
1912	5– 6	11	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	7– 4	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	20–14	46	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.33	....
1915	10– 8	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.67	....
Average	11.0	26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.00	....
Total crop—																		
1910	216– 1	279	49– 6	79	22– 2	31	35– 5	46	53–11	63	30– 2	34	15– 5	16	10– 2	10	....	....
1911	183– 2	137	1–11	3	1– 6	2	5– 4	6	4–15	5	6– 7	6	7–14	7	155– 9	108	....	....
1912	323–11	457	127– 0	204	41– 6	70	67– 4	83	33– 8	38	28–13	31	14–15	15	5– 7	5	3.13	2
1913	239– 9	273	15– 8	29	13– 9	17	15– 5	18	33–12	37	37– 7	38	40– 2	38	76–10	65	.67	0
1914	169– 6	253	77–15	121	26–14	35	20– 7	25	19– 7	22	2–12	3	1– 1	1	0– 0	0	5.00	0
1915	147–15	147	8– 6	12	7–10	9	12–11	14	18– 0	18	20– 0	19	25– 3	22	45– 9	36	3.67	2
Average	**213.3**	**258**	**46.6**	**75**	**18.8**	**27**	**26.0**	**32**	**27.2**	**31**	**20.8**	**22**	**17.4**	**17**	**48.9**	**37**	**3.12**	**1.00**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
4. Tree No. 23-61-17, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	129- 2	144	9- 3	15	9-10	13	22- 2	27	15-11	18	23-12	25	23- 4	23	25- 8	23	....	....
1911	252- 5	245	13- 7	19	16- 4	20	23-11	27	26-13	28	34-11	34	46-15	43	90- 8	74	....	....
1912	162- 7	162	4-11	7	6-14	9	16- 1	19	19-10	22	23- 3	24	26- 3	25	65-13	56	0.67	....
1913	134-10	161	20- 1	31	23- 4	30	21-15	27	34- 7	38	22- 4	23	8- 3	8	4- 8	4	0	....
1914	96- 1	122	34- 4	52	12- 5	16	14- 8	17	20-14	23	7- 0	7	6- 0	6	1- 2	1	7.33	....
1915	83- 6	86	9-11	13	10- 4	12	11- 2	12	18-11	19	17- 3	16	11--10	10	4-13	4	4.00	....
Average	143.0	153	15.2	23	13.1	17	18.2	22	22.7	25	21.0	22	20.4	19	32.0	27	3.00	....
Standard grade—																		
1910	60- 6	67	5-14	10	7- 5	11	11- 8	15	7- 0	9	13-15	7	6- 8	7	8- 4	8	....	....
1911	56- 8	61	10- 3	16	10- 4	12	1-12	2	5- 7	6	4-13	5	4- 6	4	19-11	16	....	....
1912	84- 8	87	6- 9	10	2-15	4	5-10	7	10-12	12	11- 9	12	16-11	16	30- 6	26	2.00	....
1913	67- 0	86	16-13	30	9- 2	12	9- 1	11	9-10	11	11-12	12	6- 2	6	4- 8	4	1.33	....
1914	58- 8	83	29- 1	47	11-14	15	6-10	9	9-15	11	1- 0	1	0- 0	0	0- 0	0	2.33	....
1915	31- 6	33	5-12	8	1-11	2	4-11	5	7- 0	7	5- 3	5	4- 9	4	2- 8	2	6.00	....
Average	59.7	70	12.4	20	7.2	9	6.5	8	8.3	9	8.0	7	6.3	6	10.9	9	2.92	....
Cull fruits—																		
1912	5- 8	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	12-11	51	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	23- 3	49	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.00	....
1915	3-15	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.00	....
Average	11.3	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.33	....

Total crop—																		
1910	189– 8	211	15– 1	25	16–15	24	33–10	42	22–11	27	37–11	32	29–12	30	33–12	31	....	....
1911	308–13	306	23–10	35	26– 8	32	25– 7	29	32– 4	34	39– 8	39	51– 5	47	110– 3	90	....	....
1912	252– 7	256	11– 4	17	9–13	13	21–11	26	30– 6	34	34–12	36	42–14	41	96– 3	82	1.71	0
1913	214– 5	298	36–14	61	32– 6	42	31– 0	38	44– 1	49	34– 0	35	14– 5	14	9– 0	8	.67	1
1914	177–12	254	63– 5	99	24– 3	31	21– 2	26	30–13	34	8– 0	8	6– 0	6	1– 2	1	4.22	2
1915	118–11	125	15– 7	21	11–15	14	15–13	17	25–11	26	22– 6	21	16– 3	14	7– 5	6	4.67	2
Average	**210.3**	**242**	**27.6**	**43**	**20.3**	**26**	**24.7**	**30**	**31.0**	**34**	**29.4**	**29**	**26.7**	**25**	**42.9**	**36**	**2.82**	**1.25**
5. Tree No. 23–60–16, Marsh strain:																		
Ivory-White grade—																		
1910	144–14	199	61–11	96	16–12	23	31– 2	40	20– 3	24	7–13	9	5– 0	5	2– 5	2	....	....
1911	82–12	55	0– 0	0	0– 0	0	0–14	1	3– 0	3	3– 6	3	8–11	7	66–13	41	....	....
1912	183–13	252	64– 8	104	28– 9	40	30–12	40	35– 9	42	13– 8	15	3–12	4	7– 3	7	1.33	....
1913	126– 3	131	6–13	10	6– 5	8	17– 0	20	25– 1	28	22– 0	22	19– 1	18	29–15	25	1.33	....
1914	87– 8	121	46–13	72	13–14	18	16–10	20	5– 8	6	4–11	5	0– 0	0	0– 0	0	4.33	....
1915	70– 1	69	7–14	10	2– 6	3	10– 0	11	14– 2	14	13–14	13	8– 0	7	13–13	11	6.67	....
Average	115.9	138	31.3	49	11.3	15	17.7	22	17.2	20	10.9	11	7.4	7	20.0	14	3.42	....
Standard grade—																		
1910	93–12	126	47–10	66	9– 0	13	17– 7	23	14– 4	18	5– 7	6	0– 0	0	0– 0	0	....	....
1911	26–13	23	1– 1	2	0–15	1	4– 0	4	4– 1	4	2– 3	2	1– 3	1	13– 6	9	....	....
1912	140–15	187	43– 6	70	21– 1	28	31–14	40	21– 8	25	11–15	13	3–14	4	7– 5	7	2.33	....
1913	87– 6	96	12– 6	20	8–11	11	7–14	9	16– 3	18	10–14	11	6– 4	6	25– 2	21	1.00	....
1914	75– 4	110	44–12	73	10–12	14	7– 6	9	10– 8	12	1–14	2	0– 0	0	0– 0	0	5.00	....
1915	45– 4	45	6–14	10	0– 0	0	8–10	9	9– 4	9	7–14	7	3– 7	3	9– 3	7	2.67	....
Average	78.2	98	26.0	40	8.4	12	12.9	16	12.7	14	6.7	7	2.5	2	9.2	7	2.75	....
Cull fruits—																		
1912	13– 3	24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	8– 2	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	25– 4	55	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.67	....
1915	9–15	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.67	....
Average	14.1	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.17	....
Total crop—																		
1910	238–10	325	109– 5	162	25–12	36	48– 9	63	34– 7	42	13– 4	15	5– 0	5	2– 5	2	....	....
1911	109– 9	78	1– 1	2	0–15	1	4–14	5	7– 1	7	5– 9	5	9–14	8	80– 3	50	....	....
1912	337–15	463	107–14	174	49–10	68	62–10	80	57– 1	67	25– 7	28	7–10	8	14– 8	14	2.00	1
1913	221–11	257	19– 3	30	15– 0	19	24–14	29	41– 4	46	32–14	33	25– 5	24	55– 1	46	1.17	0
1914	188– 0	286	91– 9	145	24–10	32	24– 0	29	16– 0	18	6– 9	7	0– 0	0	0– 0	0	5.00	2
1915	125– 4	128	14–12	20	2– 6	3	18–10	20	23– 6	23	21–12	20	11– 7	10	23– 0	18	4.67	1
Average	**203.5**	**256**	**57.3**	**89**	**19.7**	**27**	**30.6**	**38**	**29.9**	**34**	**17.6**	**18**	**9.9**	**9**	**29.2**	**22**	**3.21**	**1.0**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
6. Tree No. 23–60–12, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	161–14	169	6– 1	9	5–11	8	23– 2	28	21– 1	24	17– 7	19	29–14	30	58–10	51	......	......
1911	219–14	208	6– 7	9	3– 5	4	18– 6	21	32– 9	34	21– 4	21	48–13	45	89– 2	74	......	......
1912	176–14	189	16– 3	24	5–14	8	17– 1	21	25– 7	31	24– 5	26	28–15	29	59– 1	50	1.00	......
1913	131– 8	150	14–13	23	16– 7	21	14–14	18	35– 5	39	30– 5	31	9– 4	9	10– 8	9	1.00	......
1914	24–14	34	16– 7	24	4–12	6	0–13	1	2–14	3	0– 0	0	0– 0	0	0– 0	0	6.67	......
1915	71– 0	83	20– 8	31	9–12	12	11–11	13	6– 0	6	15–14	15	3– 7	3	3–12	3	6.00	......
Average	131.0	139	13.4	20	7.6	10	14.3	17	20.5	23	18.2	19	20.0	19	36.8	31	3.67	......
Standard grade—																		
1910	46– 9	56	6–13	10	3– 1	4	4–12	7	5–15	8	3– 9	4	6–13	8	15–10	15	......	......
1911	64–10	67	7– 3	10	3– 5	4	9–10	11	7–11	8	15– 6	15	7– 6	7	14– 1	12	......	......
1912	81– 7	86	6–11	11	2– 3	3	8– 0	10	9– 0	10	12– 7	13	14– 4	14	28–14	25	.50	......
1913	65– 9	82	18–11	31	12– 5	16	7– 0	8	8– 6	9	7– 3	7	5– 3	5	6–13	6	1.00	......
1914	42– 8	59	24– 8	39	8– 2	10	0–14	1	5–14	6	2– 0	2	1– 2	1	0– 0	0	5.00	......
1915	55– 8	63	12–15	20	10– 4	12	6– 7	7	9–14	10	8–12	8	3–10	3	3–10	3	6.00	......
Average	59.4	69	12.7	20	6.5	8	6.1	7	7.8	8	8.2	8	6.4	7	11.5	10	3.12	......
Cull fruits—																		
1912	6– 5	8	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	7–12	47	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	19– 8	37	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.00	......
1915	19– 3	34	......	......	......	......	......	......	......	......	......	......	......	......	......	......	7.00	......
Average	13.2	32	......	......	......	......	......	......	......	......	......	......	......	......	......	......	6.00	......

Total crop—																		
1910	208– 7	225	12–14	19	8–12	12	27–14	35	27– 0	32	21– 0	23	36–11	38	74– 4	66	....	....
1911	284– 8	275	13–10	19	6–10	8	28– 0	32	40– 4	42	36–10	36	56– 3	52	103– 3	86	....	....
1912	264–10	283	22–14	35	8– 1	11	25– 1	31	34– 7	41	36–12	39	43– 3	43	87–15	75	.67	0
1913	204–13	279	33– 8	54	28–12	37	21–14	26	43–11	48	37– 8	38	14– 7	14	17– 5	15	1.00	0
1914	86–14	130	40–15	63	12–14	16	1–11	2	8–12	9	2– 0	2	1– 2	1	0– 0	0	5.56	2
1915	145–11	180	33– 7	51	20– 0	24	18– 2	20	15–14	16	24–10	23	7– 1	6	7– 6	6	6.33	4
Average	**199.2**	**229**	**26.2**	**40**	**14.2**	**18**	**20.4**	**24**	**28.3**	**31**	**26.4**	**27**	**26.4**	**26**	**48.3**	**41**	**3.39**	**1.50**
7. Tree No. 23-59-15, Marsh strain:																		
Ivory-White grade—																		
1910	140– 0	183	51– 0	77	18–13	25	31– 1	38	18–10	22	8– 1	9	4– 1	4	8– 6	8	....	....
1911	116– 8	98	7– 0	10	2–11	3	8– 4	9	6–14	7	10–10	10	8–15	8	72– 2	51	....	....
1912	164–13	193	28– 8	45	13–11	18	32– 9	40	21– 2	24	35– 1	37	15– 4	15	18–10	17	2.67	....
1913	129– 0	137	13– 4	19	13– 8	17	12–14	15	27– 9	29	23–13	24	17– 8	16	20– 8	17	.67	....
1914	133– 2	183	67–12	105	28–14	37	18–11	22	9– 0	10	6–11	7	2– 2	2	0– 0	0	4.33	....
1915	58– 1	56	4– 6	6	3– 7	4	8– 6	9	7– 0	7	9–12	9	9– 0	8	16– 2	13	3.00	....
Average	123.6	142	28.6	44	13.5	17	18.6	22	15.0	17	15.6	16	9.5	9	22.6	18	2.67	....
Standard grade—																		
1910	43–10	65	17–11	30	8– 4	12	8– 2	11	5– 1	7	2– 9	3	0–15	1	1– 0	1	....	....
1911	50– 0	44	1– 7	2	3– 7	4	6–14	7	2–14	3	4– 5	4	9– 3	8	21–14	16	....	....
1912	135–14	160	24– 4	38	12– 3	16	25– 6	31	14– 6	16	29– 7	31	17– 6	17	12–14	11	.83	....
1913	47– 8	54	9–12	14	7– 4	9	6– 1	7	10– 4	11	3–15	4	5– 6	5	4–14	4	.67	....
1914	31–13	45	13–15	23	7–11	10	5–14	7	3– 6	4	0–15	1	0– 0	0	0– 0	0	4.67	....
1915	44– 0	44	6– 2	9	1–11	2	4–10	5	3– 2	3	13–14	13	7– 1	6	7– 8	6	6.33	....
Average	58.8	69	12.2	19	6.7	9	9.5	12	6.5	7	9.2	9	6.6	6	8.0	6	3.13	....
Cull fruits—																		
1912	1– 7	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	11– 3	44	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	8–11	25	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.67	....
1915	4–14	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.67	....
Average	6.5	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.67	....
Total crop—																		
1910	183–10	248	68–11	107	27– 1	37	39– 3	49	23–11	29	10–10	12	5– 0	5	9– 6	9	....	....
1911	166– 8	142	8– 7	12	6– 2	7	15– 2	16	9–12	10	14–15	14	18– 2	16	94– 0	67	....	....
1912	302– 2	359	52–12	83	25–14	34	57–15	71	35– 8	40	64– 8	68	32–10	32	31– 8	28	1.44	0
1913	187–11	235	23– 0	33	20–12	26	18–15	22	37–13	40	27–12	28	22–14	21	25– 6	21	.67	0
1914	173–10	253	81–11	128	36– 9	47	24– 9	29	12– 6	14	7–10	8	2– 2	2	0– 0	0	3.89	3
1915	106–15	107	10– 8	15	5– 2	6	13– 0	14	10– 2	10	23–10	22	10– 1	14	23–10	19	4.00	0
Average	**186.8**	**224**	**40.8**	**63**	**20.3**	**26**	**28.1**	**34**	**21.5**	**24**	**24.8**	**25**	**16.1**	**15**	**30.6**	**24**	**2.50**	**0.75**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
8. Tree No. 23-61-21, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	138- 3	184	60- 7	91	24- 1	31	20-10	26	20- 8	23	8- 5	9	3- 1	3	1- 3	1	....	....
1911	162- 7	145	10- 3	13	6-15	8	10- 1	11	12- 1	12	19-13	19	15-11	14	87-11	68	....	....
1912	146- 3	175	26- 2	41	16- 6	22	23- 2	28	27- 4	31	24- 9	26	11- 2	11	17-10	16	1.00	....
1913	104-12	126	25- 7	38	20- 5	26	15- 4	18	19- 3	21	8-15	9	7- 8	7	8- 2	7	1.00	....
1914	55- 2	79	36- 0	56	6- 2	8	7-12	9	5- 4	6	0- 0	0	0- 0	0	0- 0	0	3.33	....
1915	98- 7	105	16- 7	22	12-15	15	17- 6	19	22-11	23	12- 8	12	10- 5	9	6- 3	5	7.67	....
Average	117.5	136	29.1	44	14.5	18	15.7	19	17.8	19	12.4	13	7.9	7	20.1	16	3.25	....
Standard grade—																		
1910	44- 5	65	20- 8	33	8- 8	12	6- 9	9	6-14	9	1-14	2	0- 0	0	0- 0	0	....	....
1911	54- 9	60	10-15	19	3-12	4	7- 8	8	6-13	7	5- 8	5	8-14	8	11- 3	9	....	....
1912	104- 0	122	23- 3	36	10- 8	14	17- 9	21	15- 9	16	12- 8	13	9- 7	9	15- 4	13	.50	....
1913	52-15	69	18-11	30	7-11	10	10- 5	12	8- 3	9	3-14	4	3- 0	3	1- 3	1	2.00	....
1914	57- 3	86	40-14	66	9- 5	12	4- 6	5	2-10	3	0- 0	0	0- 0	0	0- 0	0	7.00	....
1915	59- 3	65	13- 5	18	11- 5	13	9- 4	10	10-12	11	4- 1	4	6-14	6	3-10	3	4.67	....
Average	62.0	78	21.3	33	8.5	11	9.3	10	8.5	10	4.6	4	4.7	5	5.2	5	3.54	....
Cull fruits—																		
1912	0- 9	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	6-15	46	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	18- 2	36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....
1915	2- 3	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.00	....
Average	7.0	22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.84	....

Total crop—																		
1910	182- 8	249	80-15	124	32- 9	43	27- 3	35	27- 6	32	10- 3	11	3- 1	3	1- 3	1	....	....
1911	217- 0	205	21- 2	32	10-11	12	17- 9	19	18-14	19	25- 5	24	24- 9	22	98-14	77	....	....
1912	250-12	298	49- 5	77	26-14	36	40-11	49	42-13	47	37- 1	39	20- 9	20	32-14	29	.67	1
1913	164-10	241	44- 2	68	28- 0	36	25- 9	30	27- 6	30	12-13	13	10- 8	10	9- 5	8	1.50	1
1914	130- 7	201	76-14	122	15- 7	20	12- 2	14	7-14	9	0- 0	0	0- 0	0	0- 0	0	4.67	1
1915	159-13	174	29-12	40	24- 4	28	26-10	29	33- 7	34	16- 9	16	17- 3	15	9-13	8	5.63	3
Average	**184.2**	**228**	**50.4**	**77**	**23.0**	**29**	**25.0**	**29**	**26.3**	**29**	**17.0**	**17**	**12.6**	**12**	**25.3**	**21**	**3.12**	**1.50**
9. Tree No. 23-61-20, Marsh strain:																		
Ivory-White grade—																		
1910	80- 4	134	43- 2	83	8-12	20	14-13	16	9- 9	11	1-13	2	2- 3	2	0- 0	0	....	....
1911	100- 4	72	2- 6	3	2- 6	3	0-13	1	2-12	3	1- 1	1	3-10	3	87- 4	58	....	....
1912	159- 3	204	27- 9	44	37- 9	51	31-11	40	27- 4	32	24-14	27	3-15	4	6- 5	6	4.33	....
1913	155-11	159	7- 2	11	17-11	22	16-10	19	32-13	35	24-14	24	22- 1	20	34- 8	28	1.67	....
1914	69- 7	97	35-10	56	16-14	22	8- 8	10	4- 8	5	3-15	4	0- 0	0	0- 0	0	5.33	....
1915	102- 7	113	27-15	39	8- 8	10	20- 8	22	9-12	10	15-11	15	10- 3	9	9-14	8	5.00	....
Average	111.2	130	24.0	39	15.3	21	15.5	18	14.4	16	12.0	12	7.0	6	23.0	16	4.08	....
Standard grade—																		
1910	69-11	126	44-15	84	4- 2	16	11-10	15	7- 3	9	0-14	1	0-15	1	0- 0	0	....	....
1911	19- 5	18	2-15	4	1-13	2	0- 0	0	3- 2	3	1- 2	1	4- 9	4	5-12	4	....	....
1912	127- 5	159	30- 2	46	20- 4	27	28- 1	34	18- 8	21	16-14	18	8- 0	8	5- 8	5	2.67	....
1913	56-12	64	7- 2	11	10- 5	13	9- 9	11	11- 4	12	8-15	9	2- 4	2	7- 5	6	.33	....
1914	54-14	81	37-10	60	6-15	9	6-14	8	3- 7	4	0- 0	0	0- 0	0	0- 0	0	3.67	....
1915	69-10	80	21- 6	31	7-11	9	12- 4	13	12- 0	12	11-12	11	3- 6	3	1- 3	1	3.67	....
Average	66.3	88	24.0	40	8.5	13	11.4	14	9.3	10	6.6	7	3.2	3	3.3	3	2.58	....
Cull fruits—																		
1912	4- 0	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	6- 9	26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	18- 9	34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.33	....
1915	2- 8	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.33	....
Average	7.9	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.33	....
Total crop—																		
1910	149-15	260	88- 1	167	12-14	36	26- 7	31	16-12	20	2-11	3	3- 2	3	0- 0	0	....	....
1911	119- 9	90	5- 5	7	4- 3	5	0-13	1	5-14	6	2- 3	2	8- 3	7	93- 0	62	....	....
1912	290- 8	371	57-11	90	57-13	78	59-12	74	45-12	53	41-12	45	11-15	12	11-13	11	3.22	0
1913	219- 0	249	14- 4	22	28- 0	35	26- 3	30	44- 1	47	33-13	33	24- 5	22	41-13	34	1.00	2
1914	142-14	212	73- 4	116	23-13	31	15- 6	18	7-15	9	3-15	4	0- 0	0	0- 0	0	4.11	4
1915	174- 9	198	49- 5	70	16- 3	19	32-12	35	21-12	22	27- 7	26	13- 9	12	11- 1	9	4.00	0
Average	**182.7**	**230**	**48.0**	**79**	**23.8**	**34**	**26.9**	**32**	**23.7**	**26**	**18.6**	**19**	**10.2**	**9**	**26.3**	**19**	**3.08**	**1.50**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
10. Tree No. 23-61-11, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	128- 6	180	59-13	93	24- 4	33	24- 8	31	13- 7	16	4- 8	5	0-14	1	1- 0	1	....	....
1911	194- 6	195	11- 1	16	5- 5	7	12-15	15	20-15	23	34- 4	37	33- 2	32	76-12	65	....	....
1912	171-15	222	44- 3	71	29- 5	39	33- 5	42	26-10	31	24- 1	25	7-13	8	6-10	6	1.67	....
1913	91- 9	103	6-12	11	10- 8	14	9-15	12	23- 3	26	19-12	20	16-15	16	4- 8	4	0	....
1914	80- 3	115	46- 5	73	20-12	27	7-12	9	5- 6	6	0- 0	0	0- 0	0	0- 0	0	5.67	....
1915	56-14	59	7-10	10	6-10	8	10- 1	11	11- 3	11	10-12	10	8- 0	7	2-10	2	4.00	....
Average	120.6	146	29.3	46	16.1	21	16.4	20	16.8	19	15.6	16	11.1	10	15.3	13	2.84	....
Standard grade—																		
1910	71-15	99	24- 7	40	15- 3	20	16- 8	21	13-15	16	1-14	2	0- 0	0	0- 0	0	....	....
1911	74- 3	77	3-11	6	4-10	6	9- 2	11	11-13	13	8-13	9	10- 9	10	25- 9	22	....	....
1912	86- 6	115	26-11	43	13- 6	18	24- 3	30	11- 4	13	4- 9	5	2- 0	2	4- 5	4	4.33	....
1913	38- 2	51	12- 2	22	5- 8	7	4-15	6	7- 6	8	3-15	4	3- 3	3	1- 1	1	2.00	....
1914	43- 1	68	31-12	54	7- 2	9	3- 4	4	0-15	1	0- 0	0	0- 0	0	0- 0	0	4.00	....
1915	20-15	23	4- 6	6	3- 5	4	3-10	4	5- 0	5	2- 1	2	1- 3	1	1- 6	1	5.33	....
Average	55.8	72	17.2	28	8.2	11	10.3	13	8.4	9	3.5	4	2.8	3	5.3	5	4.42	....
Cull fruits—																		
1912	5- 3	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	8-15	42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	13- 9	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.67	....
1915	9-14	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....
Average	9.4	25	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.17	....

Total crop—																		
1910	200- 5	279	84- 4	133	39- 7	53	41- 0	52	27- 6	32	6- 6	7	0-14	1	1- 0	1	....	....
1911	268- 9	272	14-12	22	9-15	13	22- 1	26	32-12	36	43- 1	46	43-11	42	102- 5	87	....	....
1912	263- 8	347	70-14	114	42-11	57	57- 8	72	37-14	44	28-10	30	9-13	10	10-15	10	3.33	0
1913	138-10	196	18-14	33	16- 0	21	14-14	18	30- 9	34	23-11	24	20- 2	19	5- 9	5	2.00	0
1914	136-13	214	78- 1	127	27-14	36	11- 0	13	6- 5	7	0- 0	0	0- 0	0	0- 0	0	4.78	1
1915	87-11	97	12- 0	16	9-15	12	13-11	15	16- 3	16	12-13	12	9- 3	8	4- 0	3	4.33	1
Average	**182.6**	**234**	**46.5**	**74**	**24.3**	**32**	**26.7**	**33**	**25.2**	**28**	**19.1**	**20**	**13.9**	**13**	**20.6**	**18**	**3.61**	**0.50**
11. Tree No. 23-63-21, Marsh strain:																		
Ivory-White grade—																		
1910	126- 2	172	47- 4	73	22-13	31	24- 6	31	18- 7	22	5- 2	6	6- 1	7	2- 1	2	....	....
1911	180- 5	137	0-15	2	0-10	1	4- 7	5	3-13	4	7- 6	7	14- 7	13	148-11	105	....	....
1912	190- 4	237	42- 4	67	29- 3	39	34- 3	42	31-12	36	23- 6	25	15- 3	15	14- 5	13	1.00	....
1913	128-13	144	12-15	20	21- 9	27	23- 2	27	18- 7	20	21- 0	21	19- 4	18	12- 8	11	0	....
1914	63- 4	84	28- 2	42	19- 4	24	7- 8	9	5- 8	6	2-14	3	0- 0	0	0- 0	0	5.00	....
1915	66-10	71	14- 2	18	10- 3	12	7- 7	8	16- 0	16	9- 9	9	5-12	5	3- 9	3	5.67	....
Average	125.9	141	24.3	37	17.3	22	16.8	20	15.7	17	11.6	12	10.1	10	30.2	22	2.92	....
Standard grade—																		
1910	69- 4	100	25- 3	42	12-15	19	16-6	22	7-14	10	4- 0	4	2-14	3	0- 0	0	....	....
1911	24- 8	23	1- 1	2	0- 0	0	2-12	3	0- 0	0	1-14	2	7- 9	7	11- 4	9	....	....
1912	82- 5	112	36- 9	58	12- 2	16	8- 1	12	7- 7	8	6-11	7	6- 1	6	5- 6	5	1.67	....
1913	45-13	67	12- 2	30	13- 8	17	5- 6	6	6- 9	7	2- 2	2	1- 2	1	5- 0	4	6.67	....
1914	54-10	81	37- 2	60	7-12	10	2- 4	3	3- 8	4	2-14	3	1- 2	1	0- 0	0	5.67	....
1915	35- 3	36	5- 0	7	2-10	3	6-10	7	9- 2	9	2- 2	2	5-14	5	3-13	3	5.33	....
Average	51.9	70	19.5	33	8.1	11	7.0	9	5.7	7	3.2	3	4.1	4	4.2	4	4.84	....
Cull fruits—																		
1912	4-11	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	5-10	29	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	11-10	24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
1915	0-13	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
Average	5.7	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
Total crop—																		
1910	195- 6	272	72- 7	115	35-12	50	40-12	53	26- 5	32	9- 2	10	8-15	10	2- 1	2	....	....
1911	204-13	160	2- 0	4	0-10	1	7- 3	8	3-13	4	9- 4	9	22- 0	20	159-15	114	....	....
1912	277- 4	357	78-13	125	41- 5	55	42- 4	54	39- 3	44	30- 1	32	21- 4	21	19-11	18	1.44	0
1913	180- 4	240	25- 1	50	35- 1	44	28- 8	33	25- 0	27	23- 2	23	20- 6	19	17- 8	15	3.33	1
1914	129- 8	189	65- 4	102	27- 0	34	9-12	12	9- 0	10	5-12	6	1- 2	1	0- 0	0	5.22	1
1915	102-10	108	19- 2	25	12-13	15	14- 1	15	25- 2	25	11-11	11	11-10	10	7- 6	6	5.43	2
Average	**181.6**	**221**	**43.8**	**70**	**25.4**	**33**	**23.8**	**29**	**21.4**	**24**	**14.8**	**15**	**14.2**	**14**	**34.4**	**26**	**3.85**	**1.00**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
12. Tree No. 23-60-11, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	122-15	144	21- 7	34	9- 6	13	18-10	24	15- 8	18	15-12	17	14- 1	14	28- 3	24	......	......
1911	244- 9	237	12- 2	18	9- 9	12	29-12	34	19- 8	21	21- 2	21	36- 9	35	115-15	96	......	......
1912	162- 1	151	3-14	6	5- 6	7	10-15	13	15-10	17	11-13	12	22-15	22	91- 8	74	0	......
1913	129- 7	148	17-11	27	18- 8	24	21- 4	25	28- 9	31	14- 7	15	13-10	13	15- 6	13	1.00	......
1914	33- 0	42	14- 1	21	7- 5	9	3-10	4	5-14	6	2- 2	2	0- 0	0	0- 0	0	4.00	......
1915	48- 4	51	9- 7	13	3- 6	4	6- 5	7	8-12	9	9- 8	9	3- 8	3	7- 6	6	5.00	......
Average	123.4	129	13.1	20	8.9	11	15.1	18	15.6	17	12.5	13	15.1	15	43.1	36	2.50	......
Standard grade—																		
1910	72- 7	99	10-14	21	6-14	11	11-18	17	12- 7	16	15- 7	18	5- 9	7	9- 2	9	......	......
1911	37- 6	41	6- 0	9	2-14	4	4- 2	5	1-12	2	4-10	5	1-15	2	16- 1	14	......	......
1912	29- 0	29	1-10	3	2- 8	3	2- 8	3	3-12	4	3-12	4	2- 0	2	12-14	10	.83	......
1913	67- 7	86	16- 2	32	8- 0	10	7-14	9	10- 2	11	10- 0	10	9- 9	9	5-12	5	3.00	......
1914	44- 0	53	11-10	18	10- 1	12	10- 0	11	7-11	8	2- 4	2	0- 0	0	2- 6	2	3.33	......
1915	47-13	51	8-13	12	6- 0	7	8- 6	9	9- 3	9	8- 3	8	1- 3	1	6- 1	5	4.00	......
Average	49.7	60	9.2	16	6.1	8	7.5	9	7.5	8	7.3	8	3.4	3	8.7	7	2.79	......
Cull fruits—																		
1912	0- 0	0	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	7- 4	36	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	8- 1	7	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.00	......
1915	20- 6	34	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.67	......
Average	8.9	36	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.33	......

Total crop—																		
1910	195- 6	243	32- 5	55	16- 4	24	30-12	41	27-15	34	31- 3	35	19-10	21	37- 5	33	....	....
1911	281-15	278	18- 2	27	12- 7	16	33-14	39	21- 4	23	25-12	26	38- 8	37	132- 0	110	....	....
1912	191- 1	180	5- 8	9	7-14	10	13- 7	16	19- 6	21	15- 9	16	24-15	24	104- 6	84	.56	0
1913	204- 2	270	33-13	59	26- 8	34	29- 2	34	38-11	42	24- 7	25	23- 3	22	21- 2	18	2.00	1
1914	85- 1	112	25-11	39	17- 6	21	13-10	15	13- 9	14	4- 6	4	0- 0	0	2- 6	2	3.78	4
1915	116- 7	136	18- 4	25	9- 6	11	14-11	16	17-15	18	17-11	17	4-11	4	13- 7	11	4.56	2
Average	**179.0**	**203**	**22.3**	**36**	**15.0**	**19**	**22.6**	**27**	**23.1**	**25**	**19.8**	**21**	**18.5**	**18**	**51.8**	**43**	**2.73**	**1.75**
13. Tree No. 23-60-9, Marsh strain:																		
Ivory-White grade—																		
1910	164 -1	203	48- 0	73	22- 9	30	19- 7	24	16- 9	19	20- 9	22	11-14	12	25- 1	23	....	....
1911	175-11	182	16- 2	22	15-13	19	27-12	31	36- 2	38	23- 0	23	22- 0	20	34-14	29	....	....
1912	197- 4	241	37- 3	58	26- 1	35	41-12	52	26-13	31	23- 8	25	18-11	19	23- 4	21	.67	....
1913	76- 1	83	4- 7	8	8-13	11	9-11	11	14- 7	16	17- 0	17	14-10	14	7- 1	6	1.67	....
1914	50- 7	70	27-14	43	8- 8	11	5- 0	6	7- 3	8	1-14	2	0- 0	0	0- 0	0	7.00	....
1915	45- 0	46	2-13	4	2-10	3	13- 0	14	10-10	11	6- 6	6	5- 9	5	4- 0	3	3.67	....
Average	118.1	138	22.7	35	14.1	18	19.4	23	18.6	21	15.4	16	12.1	12	15.7	14	3.25	....
Standard grade—																		
1910	47- 0	64	12-14	22	7- 5	10	9- 4	12	9- 3	11	4- 8	5	1-14	2	2- 0	2	....	....
1911	87- 8	97	14-10	21	9-12	12	12- 4	14	17- 3	18	14-14	15	8-10	8	10- 3	9	....	....
1912	70-12	93	22-12	38	6-14	9	12-12	16	12- 4	14	9- 8	10	2- 2	2	4- 8	4	1.67	....
1913	28- 5	38	8- 2	16	5-10	7	2- 7	3	4-11	5	3- 1	3	3- 4	3	1- 2	1	2.67	....
1914	49-10	73	30-10	50	9- 4	12	3- 6	4	6- 6	7	0- 0	0	0- 0	0	0- 0	0	3.00	....
1915	32- 2	35	6- 6	9	2- 6	3	5- 6	6	5- 0	5	5- 8	5	3- 7	3	4- 1	4	5.00	....
Average	52.6	66	15.9	26	6.8	9	7.6	9	9.1	10	6.2	6	3.2	3	3.7	3	3.09	....
Cull fruits—																		
1912	2- 1	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	7- 3	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	11-14	30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.67	....
1915	5- 6	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.00	....
Average	6.6	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.34	....
Total crop—																		
1910	211- 1	267	60-14	95	29-14	40	28-11	36	25-12	30	25- 1	27	13-12	14	27- 1	25	....	....
1911	263- 3	279	30-12	43	25- 9	31	40- 0	45	53- 5	56	37-14	38	30-10	28	45- 1	38	....	....
1912	270- 1	338	59-15	96	32-15	44	54- 8	68	39- 1	45	33- 0	35	20-13	21	27-12	25	1.33	0
1913	111- 9	159	12- 9	24	14- 7	18	12- 2	14	19- 2	21	20- 1	20	17-14	17	8- 3	7	2.17	1
1914	111-15	173	58- 8	93	17-12	23	8- 6	10	13- 9	15	1-14	2	0- 0	0	0- 0	0	4.22	1
1915	82- 8	88	9- 3	13	5- 0	6	18- 6	20	15-10	16	11-14	11	9- 0	8	8- 1	7	3.56	7
Average	**175.1**	**217**	**38.6**	**61**	**20.9**	**27**	**27.0**	**32**	**27.7**	**31**	**21.6**	**22**	**15.3**	**15**	**19.4**	**17**	**2.82**	**2.25**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
14. Tree No. 23-62-16, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	130–10	178	55–13	89	10–14	15	24–10	31	17–14	21	5–13	7	7– 5	8	8– 5	7	....	....
1911	193–13	189	4– 9	7	11– 0	14	19– 2	22	22– 7	24	26–12	27	35–11	33	74– 4	62	....	....
1912	149– 3	166	13– 9	21	10– 9	14	17–15	22	28– 7	33	24– 9	26	18– 6	18	35–12	32	1.00	....
1913	84–11	96	6– 9	10	9–14	13	15–12	19	16–13	19	16– 7	17	12– 6	12	6–14	6	.67	....
1914	51–15	73	28– 0	44	11–12	15	6–12	8	4– 8	5	0–15	1	0– 0	0	0– 0	0	5.00	....
1915	80– 9	84	12–15	18	8– 8	10	9– 0	10	23– 8	23	14– 8	13	5–14	5	6– 4	5	4.00	....
Average	115.1	131	20.2	32	10.4	14	15.5	19	18.9	21	14.8	15	13.3	13	21.9	19	2.67	....
Standard grade—																		
1910	75–11	116	38–14	66	5–14	9	17– 1	23	8–11	12	1–13	2	2– 5	3	1– 1	1	....	....
1911	55– 0	61	7– 2	11	3–10	5	8–12	10	7– 6	8	9–12	10	11– 7	11	6–15	6	....	....
1912	49– 7	56	7– 2	12	5–12	8	6– 6	8	6– 7	7	6– 6	6	3– 1	3	14– 5	12	.83	....
1913	46– 1	59	13– 0	23	9–12	12	6– 0	7	4–12	5	6– 0	6	3– 3	3	3– 6	3	0	....
1914	49– 7	74	32–10	55	4–12	6	2– 8	3	6– 8	7	3– 1	3	0– 0	0	0– 0	0	5.33	....
1915	43– 7	45	6–11	9	4– 3	5	9– 4	10	8– 3	8	7–12	7	4–12	4	2–10	2	5.00	....
Average	53.2	69	17.6	29	5.7	7	8.4	10	7.0	8	5.8	6	4.1	4	4.6	4	2.79	....
Cull fruits—																		
1912	12– 4	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	7–13	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	14– 4	32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
1915	3– 1	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....
Average	9.3	21	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.35	....

Total crop—																		
1910	206-5	294	94-11	155	16-12	24	41-11	54	26-9	33	7-10	9	9-10	11	9-6	8	....	....
1911	248-13	250	11-11	18	14-10	19	27-14	32	29-13	32	36-8	37	47-2	44	81-3	68	....	....
1912	210-14	240	20-11	33	16-5	22	24-5	30	34-14	40	30-15	32	21-7	21	50-1	44	.89	0
1913	138-9	183	19-9	33	19-10	25	21-12	26	21-9	24	22-7	23	15-9	15	10-4	9	.33	1
1914	115-10	179	60-10	99	16-8	21	9-4	11	11-0	12	4-0	4	0-0	0	0-0	0	5.11	2
1915	127-1	135	19-10	27	12-11	15	18-4	20	31-11	31	22-4	20	10-10	9	8-14	7	4.22	2
Average	**174.5**	**214**	**37.8**	**61**	**16.1**	**21**	**23.9**	**29**	**25.9**	**29**	**20.6**	**21**	**17.4**	**17**	**26.6**	**23**	**2.64**	**1.25**
15. Tree No. 23-60-8, Marsh strain:																		
Ivory-White grade—																		
1910	138-10	183	52-15	80	19-11	26	33-1	41	16-5	19	11-6	12	4-2	4	1-2	1	....	....
1911	167-15	156	3-14	4	6-8	8	6-0	7	19-10	21	19-4	19	35-10	33	77-1	64	....	....
1912	193-4	210	17-1	25	13-11	18	32-10	39	39-13	44	29-6	30	28-4	27	32-7	27	.67	....
1913	102-1	111	9-5	14	9-15	13	7-0	8	27-10	30	24-13	25	13-14	13	9-8	8	1.00	....
1914	61-7	84	31-2	48	16-13	21	7-14	9	5-10	6	0-0	0	0-0	0	0-0	0	7.67	....
1915	46-4	47	6-7	9	2-9	3	8-6	9	9-2	9	6-10	6	10-12	9	2-6	2	4.67	....
Average	118.3	132	20.1	30	11.5	15	15.8	19	19.7	22	15.2	15	15.4	14	20.4	17	3.50	....
Standard grade—																		
1910	40-0	55	14-5	23	6-5	9	8-9	11	6-14	8	2-15	3	0-0	0	1-0	1	....	....
1911	54-2	52	1-9	2	2-6	3	4-8	4	8-7	9	6-15	7	7-1	7	23-4	20	....	....
1912	56-11	63	7-5	11	7-3	9	9-12	11	7-7	8	6-12	7	9-3	9	9-1	8	2.00	....
1913	64-8	78	13-1	22	10-3	13	10-1	12	11-0	12	9-0	9	7-5	7	3-14	3	1.00	....
1914	43-15	62	24-10	39	7-4	9	10-6	12	1-11	2	0-0	0	0-0	0	0-0	0	5.67	....
1915	28-3	30	4-14	7	5-2	6	3-10	4	4-2	4	6-10	6	1-3	1	2-10	2	5.00	....
Average	47.9	57	11.0	17	6.4	8	7.8	9	6.6	7	5.4	6	4.2	4	6.6	6	3.42	....
Cull fruits—																		
1912	5-13	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	10-13	48	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	20-6	45	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
1915	4-11	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	8.00	....
Average	10.4	27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.50	....
Total crop—																		
1910	178-10	238	67-4	103	26-0	35	41-10	52	23-3	27	14-5	15	4-2	4	2-2	2	....	....
1911	222-1	208	5-7	6	8-14	11	10-8	11	28-1	30	26-3	26	42-11	40	100-5	84	....	....
1912	255-12	282	24-6	36	20-14	27	42-6	50	47-4	52	36-2	37	37-7	36	41-8	35	1.56	0
1913	177-6	237	22-6	36	20-2	26	17-1	20	38-10	42	33-13	34	21-3	20	13-6	11	1.00	0
1914	125-12	191	55-12	87	24-1	30	18-4	21	7-5	8	0-0	0	0-0	0	0-0	0	6.11	1
1915	79-2	84	11-5	16	7-11	9	12-0	13	13-4	13	13-4	12	11-15	10	5-0	4	5.89	0
Average	**173.1**	**207**	**31.1**	**47**	**17.9**	**23**	**23.6**	**28**	**26.3**	**29**	**20.6**	**21**	**19.6**	**18**	**27.1**	**23**	**3.64**	**0.25**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
16. Tree No. 23-59-7, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	109–13	143	31– 1	51	15– 8	21	19–11	25	12– 1	14	11–15	13	8– 4	9	10–11	10	....	....
1911	146– 0	126	2–14	4	1–10	2	2–12	3	9– 6	10	16– 6	16	24–10	22	88– 6	69	....	....
1912	176– 5	207	27–10	42	14– 4	19	32– 0	39	30–14	35	32– 9	35	18– 0	18	21– 0	19	.67	....
1913	111–11	125	9–13	16	15– 0	19	15–13	19	29–10	32	15– 0	15	14–10	14	11–13	10	2.00	....
1914	67– 8	91	29–10	46	16– 7	21	13– 1	15	7– 8	8	0–14	1	0– 0	0	0– 0	0	6.33	....
1915	82–12	87	10–13	15	3– 6	4	12– 8	14	20– 7	21	18– 8	18	12– 2	11	5– 0	4	5.00	....
Average	115.7	130	18.6	29	11.0	14	16.0	19	18.3	20	15.9	16	12.9	12	22.8	19	3.50	....
Standard grade—																		
1910	69– 4	97	14–13	28	11– 7	17	13– 7	18	13–13	17	5–14	7	5–13	6	4– 1	4	....	....
1911	75– 6	68	2– 0	4	5– 3	6	6– 6	7	4–13	5	9– 2	9	8–12	8	39– 2	29	....	....
1912	72– 2	90	18– 2	29	9–10	13	13– 5	16	9–13	11	9– 6	10	4– 0	4	7–14	7	1.50	....
1913	28– 8	38	8– 9	16	6– 6	8	3– 7	4	4–10	5	3– 0	3	0– 0	0	2– 8	2	3.67	....
1914	40– 5	55	19– 0	29	10– 0	13	8– 8	10	1–11	2	0– 0	0	1– 2	1	0– 0	0	8.00	....
1915	23– 9	25	2–15	4	3– 4	4	4– 7	5	5– 3	5	3– 3	3	3– 4	3	1– 5	1	7.00	....
Average	51.5	62	11.0	18	7.7	10	8.3	10	6.7	8	5.1	6	3.9	4	9.2	7	5.04	....
Cull fruits—																		
1912	6– 9	14	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1913	9– 1	35	....	......	....	......	....	......	....	......	....	......	....	......	....	......	....	....
1914	9–12	20	....	......	....	......	....	......	....	......	....	......	....	......	....	......	4.33	....
1915	2–10	4	....	......	....	......	....	......	....	......	....	......	....	......	....	......	5.00	....
Average	7.0	18	....	......	....	......	....	......	....	......	....	......	....	......	....	......	4.67	....

Total crop—																		
1910	179- 1	240	46- 8	79	26-15	38	33- 2	43	25-14	31	17-13	20	14- 1	15	14-12	14	....	....
1911	221- 6	194	4-14	8	6-13	8	9- 2	10	14- 3	15	25- 8	25	33- 6	30	127- 8	98	....	....
1912	255- 0	311	45-12	71	23-14	32	45- 5	55	40-11	46	41-15	45	22- 0	22	28-14	26	1.22	6
1913	149- 4	198	18- 6	32	21- 6	27	19- 4	23	34- 4	37	18- 0	18	14-10	14	14- 5	12	2.83	0
1914	117- 9	166	48-10	75	26- 7	34	21- 9	25	9- 3	10	0-14	1	1- 2	1	0- 0	0	6.22	4
1915	108-15	116	13-12	19	6-10	8	16-15	19	25-10	26	21-11	21	15- 6	14	6- 5	5	5.67	1
Average	**171.9**	**204**	**29.6**	**47**	**18.7**	**24**	**24.2**	**29**	**25.0**	**28**	**21.0**	**22**	**16.8**	**16**	**32.0**	**26**	**3.99**	**2.75**
17. Tree No. 23-63-15, Marsh strain:																		
Ivory-White grade—																		
1910	141- 0	179	35-14	57	21-10	29	24- 1	30	23- 6	27	15- 4	16	7-12	8	13- 1	12	....	....
1911	148- 2	146	11-12	16	9- 2	11	12- 4	14	20-14	22	30- 8	30	20-12	19	42-14	34	....	....
1912	142-11	184	35-12	62	20- 9	27	28- 3	35	19- 2	22	15- 8	16	11- 2	11	12- 7	11	1.00	....
1913	94-15	124	27- 9	44	22- 3	29	18-11	23	15- 3	17	7- 1	7	4- 4	4	0- 0	0	1.33	....
1914	63-10	93	40- 4	64	15- 9	20	3- 5	4	3- 9	4	0-15	1	0- 0	0	0- 0	0	7.00	....
1915	39- 0	42	4- 8	6	3-15	5	11- 8	13	7-14	8	5- 2	5	1- 1	1	5- 0	4	5.33	....
Average	104.9	128	25.9	42	15.5	20	16.3	20	15.0	17	12.4	13	7.5	7	12.2	10	3.67	....
Standard grade—																		
1910	73-25	103	23-13	39	19- 7	27	11-11	15	9-10	11	8- 0	9	2- 0	2	0- 0	0	....	....
1911	89- 3	92	9-10	14	4-14	6	15- 0	17	9- 7	10	10- 4	10	14-11	14	25- 5	21	....	....
1912	91-10	128	41-10	68	13- 6	18	20-13	25	7-14	9	5-13	6	0- 0	0	2- 2	2	1.50	....
1913	46-14	63	19- 5	31	7- 9	10	9-12	11	7- 4	8	2- 0	2	1- 0	1	0- 0	0	2.67	....
1914	46- 9	70	33- 8	54	8- 0	10	4- 2	5	0-15	1	0- 0	0	0- 0	0	0- 0	0	6.33	....
1915	23- 3	26	6- 2	8	3- 6	4	4- 6	5	4- 0	4	4- 3	4	1- 2	1	0- 0	0	6.50	....
Average	62.0	80	22.3	35	9.5	13	11.0	13	6.5	7	5.0	5	3.1	3	4.6	4	4.25	....
Cull fruits—																		
1912	2- 8	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	9- 5	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	6-14	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.33	....
1915	1-11	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.00	....
Average	5.1	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.17	....
Total crop—																		
1910	215- 9	282	59-11	96	41- 1	56	35-12	45	33- 0	38	23- 4	25	9-12	10	13- 1	12	....	....
1911	237- 5	238	21- 6	30	14- 0	17	27- 4	31	30- 5	32	40-12	40	35- 7	33	68- 3	55	....	....
1912	236-13	317	77- 6	130	33-15	45	49- 0	60	27- 0	31	21- 5	22	11- 2	11	14- 9	13	1.33	0
1913	151- 2	220	46-14	75	29-12	39	28- 7	34	22- 7	25	9- 1	9	5- 4	5	0- 0	0	2.00	1
1914	117- 1	180	73-12	118	23- 9	30	7- 7	9	4- 8	5	0-15	1	0- 0	0	0- 0	0	5.56	0
1915	63-14	71	10-10	14	7- 5	9	15-14	18	11-14	12	9- 5	9	2- 3	2	5- 0	4	5.00	1
Average	**170.3**	**218**	**48.3**	**77**	**24.9**	**33**	**27.3**	**33**	**21.5**	**24**	**17.4**	**18**	**10.6**	**10**	**16.8**	**14**	**3.47**	**0.50**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
18. Tree No. 23–62–22, Alternate-Bearing strain: Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	140–12	209	83–11	136	20– 9	28	17– 5	22	14– 3	17	4– 1	5	0–14	1	0– 0	0	....	....
1911	112–13	96	7– 3	11	2– 7	3	2–11	3	6– 0	6	7– 5	7	12– 1	11	75– 2	55	....	....
1912	174– 5	214	29–14	49	22– 9	31	25– 9	32	30–14	36	25– 5	28	18–12	19	21– 6	19	3.00	....
1913	100–13	120	18– 2	27	22– 5	28	23– 6	27	16–13	18	15– 9	16	1– 2	1	3– 8	3	3.00	....
1914	61–14	87	29– 8	46	15– 9	20	12– 6	16	4– 7	5	0– 0	0	0– 0	0	0– 0	0	5.00	....
1915	64– 9	72	14–12	20	14– 9	17	11– 0	12	13– 0	13	6– 6	6	1– 3	1	3–11	3	6.67	....
Average	109.2	133	30.6	48	16.3	21	15.4	19	14.2	16	9.8	10	5.7	5	17.3	13	4.42	....
Standard grade—																		
1910	35–14	60	24– 1	42	3– 1	5	3– 5	5	4– 5	6	1– 2	2	0– 0	0	0– 0	0	....	....
1911	45–12	48	9–15	15	4– 6	5	5–12	6	7–13	8	0– 0	0	4–10	4	13– 4	10	....	....
1912	85– 3	106	20– 4	34	8– 5	11	14– 7	18	13– 5	15	9– 7	10	7–15	8	11–18	10	2.83	....
1913	47– 1	60	15–14	25	10– 7	13	5– 2	6	8– 3	9	5– 3	5	1– 2	1	1– 2	1	.67	....
1914	58– 1	91	44– 2	73	7– 8	10	6– 7	8	0– 0	0	0– 0	0	0– 0	0	0– 0	0	4.00	....
1915	43–15	49	13–12	18	6– 0	7	10– 7	11	7– 0	7	3– 3	3	2– 5	2	1– 4	1	5.67	....
Average	52.6	69	21.3	35	6.6	9	7.6	9	6.8	7	3.1	4	2.6	3	4.5	4	3.29	....
Cull fruits—																		
1912	5– 2	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	3– 3	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	15– 4	27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.67	....
1915	3–13	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....
Average	6.9	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....

Total crop—																		
1910	176–10	269	107–13	178	23–10	33	20–10	27	18– 8	23	5– 3	7	0–14	1	0– 0	0	....	....
1911	158– 9	144	17– 2	26	6–13	8	8– 7	9	13–13	14	7– 5	7	16–11	15	88– 6	65	....	....
1912	264–10	326	50– 2	83	30–14	42	40– 0	50	44– 3	51	34–12	38	26–11	27	32–14	29	2.89	0
1913	151– 1	200	34– 0	52	32–12	41	28– 8	33	25– 0	27	20–12	21	2– 4	2	4–10	4	1.83	0
1914	135– 3	205	73–10	119	23– 1	30	18–13	24	4– 7	5	0– 0	0	0– 0	0	0– 0	0	4.89	3
1915	112– 5	128	28– 8	38	20– 9	24	21– 7	23	20– 0	20	9– 9	9	3– 8	3	4–15	4	5.56	2
Average	**166.4**	**212**	**51.9**	**83**	**22.9**	**30**	**23.0**	**28**	**21.0**	**23**	**12.9**	**14**	**8.3**	**8**	**21.8**	**17**	**3.79**	**1.25**
19. Tree No. 23-61-18, Alternate-Bearing strain: Ivory-White grade—																		
1910	96– 4	130	35– 4	55	13–11	19	18– 1	23	14– 5	17	10–11	12	2– 0	2	2– 4	2	....	....
1911	61–14	46	0–14	2	0–11	1	5– 4	6	2–13	3	0– 0	0	4– 6	4	47–14	30	....	....
1912	189– 5	258	82– 2	131	31– 4	41	26– 3	32	21–13	25	20–12	22	4– 1	4	3– 2	3	2.33	....
1913	91– 9	99	9– 3	13	9–12	12	20– 0	23	19– 8	21	13– 8	13	9–12	9	9–14	8	.33	....
1914	51– 1	72	28– 4	44	12– 2	16	6– 1	7	4–10	5	0– 0	0	0– 0	0	0– 0	0	5.33	....
1915	81– 2	90	20–13	29	13–12	16	12– 0	13	10– 2	10	13– 9	13	6–13	6	4– 1	3	4.00	....
Average	95.2	116	29.4	46	13.5	18	14.6	17	12.2	13	9.8	10	4.5	4	11.2	8	3.00	....
Standard grade—																		
1910	81–15	119	36– 2	59	9– 7	14	16– 1	21	13–11	17	6–10	8	0– 0	0	0– 0	0	....	....
1911	37– 2	31	4– 4	6	0–14	1	0–13	1	4–13	5	0– 0	0	4– 8	4	21–14	14	....	....
1912	95–10	128	41–14	65	12– 5	16	18– 3	22	13– 3	15	4–13	5	3– 0	3	2– 4	2	4.00	....
1913	67– 3	82	15–10	27	10– 3	13	8–12	10	13– 5	14	10– 5	10	4– 6	4	4–10	4	2.00	....
1914	48–13	69	30– 2	46	12–10	16	4– 4	5	1–13	2	0– 0	0	0– 0	0	0– 0	0	5.33	....
1915	32–13	36	7– 9	11	3– 6	4	6– 7	7	4–14	5	5– 7	5	2– 7	2	2–11	2	4.67	....
Average	60.6	78	22.6	35	8.2	10	9.1	11	8.6	10	4.5	5	2.4	2	5.2	3	4.00	....
Cull fruits—																		
1912	9– 6	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	12– 5	54	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	17– 2	41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.67	....
1915	3–14	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.00	....
Average	10.7	29	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.84	....
Total crop—																		
1910	178– 3	249	71– 6	114	23– 2	33	34– 2	44	28– 0	34	17– 5	20	2– 0	2	2– 4	2	....	....
1911	99– 0	77	5– 2	8	1– 9	2	6– 1	7	7–10	8	0– 0	0	8–14	8	69–12	44	....	....
1912	294– 5	402	124– 0	196	43– 9	57	44– 6	54	35– 0	40	25– 9	27	7– 1	7	5– 6	5	3.44	0
1913	171– 1	235	24–13	40	19–15	25	28–12	33	32–13	35	23–13	23	14– 2	13	14– 8	12	1.17	0
1914	117– 0	182	58– 6	90	24–12	32	10– 5	12	6– 7	7	0– 0	0	0– 0	0	0– 0	0	5.44	1
1915	117–13	134	28– 6	40	17– 2	20	18– 7	20	15– 0	15	19– 0	18	9– 4	8	6–12	5	4.00	1
Average	**162.9**	**213**	**52.0**	**81**	**21.7**	**28**	**23.7**	**28**	**20.8**	**23**	**14.3**	**15**	**6.9**	**6**	**16.4**	**11**	**3.51**	**0.50**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
20. Tree No. 23-60-10, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	96– 3	131	33–12	53	15–15	22	23–13	30	12–11	15	4– 2	5	2– 0	2	3–14	4	......	......
1911	159– 5	152	7– 8	10	4–14	6	18– 8	21	17– 9	19	14– 6	14	36– 4	33	60– 4	49	......	......
1912	185– 0	216	27– 7	42	24–15	32	33– 5	40	23–14	27	23–12	25	24– 7	24	27– 4	26	4.67	......
1913	94–11	102	8– 4	14	8– 8	11	8– 4	10	16–11	18	16–13	17	11– 0	10	25– 3	22	3.00	......
1914	55– 5	74	26–11	41	8–11	11	5–13	7	7–14	8	6–14	7	0– 0	0	0– 0	0	6.00	......
1915	42– 4	43	8– 8	11	2–10	3	4–10	5	6–12	7	6– 9	6	6–15	6	6– 4	5	3.67	......
Average	105.5	120	18.7	29	10.9	14	15.7	19	14.2	16	12.1	12	13.4	12	20.5	18	4.34	......
Standard grade—																		
1910	99– 8	150	49–13	84	17–10	25	17– 1	23	10– 8	13	2– 9	3	1–15	2	0– 0	0	......	......
1911	61–14	66	5– 5	8	3– 0	4	13– 6	15	7– 0	8	6–14	7	11– 6	11	14–15	13	......	......
1912	39– 9	50	12–10	19	4– 8	6	7– 7	9	9– 1	10	2–15	3	0–14	1	2– 2	2	2.33	......
1913	33– 0	50	12– 8	28	3– 3	4	6– 1	7	3– 9	4	2–15	3	2– 4	2	2– 8	2	3.33	......
1914	48–15	64	18– 1	29	8– 1	10	8–11	10	12– 1	13	0–15	1	1– 2	1	0– 0	0	4.33	......
1915	26– 7	28	3– 0	4	2– 8	3	7– 8	8	4–11	5	3– 3	3	4– 7	4	1– 2	1	3.67	......
Average	51.6	68	16.9	28	6.5	9	10.0	12	7.7	9	3.2	4	3.7	4	3.4	3	3.42	......
Cull fruits—																		
1912	2– 3	3	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	8– 5	26	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	10– 4	17	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3.67	......
1915	7– 4	10	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.67	......
Average	7.0	14	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.67	......

Total crop—																		
1910	195–11	281	83– 9	137	33– 9	47	40–14	53	23– 3	28	6–11	8	3–15	4	3–14	4	....	....
1911	221– 3	218	12–13	18	7–14	10	31–14	36	24– 9	27	21– 4	21	47–10	44	75– 3	62	....	....
1912	226–12	269	40– 1	61	29– 7	38	40–12	49	32–15	37	26–11	28	25– 5	25	29– 6	28	3.11	0
1913	136– 0	178	20–12	42	11–11	15	14– 5	17	20– 4	22	19–12	20	13– 4	12	27–11	24	3.17	0
1914	114– 8	155	44–12	70	16–12	21	14– 8	17	19– 5	21	7–13	8	1– 2	1	0– 0	0	4.67	2
1915	75–15	81	11– 8	15	5– 2	6	12– 2	13	11– 7	12	9–12	9	11– 6	10	7– 6	6	4.33	0
Average	**161.7**	**197**	**35.6**	**57**	**17.4**	**23**	**25.7**	**31**	**21.9**	**25**	**15.3**	**16**	**17.1**	**16**	**23.9**	**21**	**2.55**	**0.50**
21. Tree No. 23–59–8, Marsh strain:																		
Ivory-White grade—																		
1910	112–14	149	35– 8	56	19–15	27	21– 5	27	18– 6	21	7– 3	8	3–12	4	6– 3	6	....	....
1911	197–12	173	4–15	7	0–14	1	11–14	13	17–10	18	20– 6	19	37– 4	34	104– 3	81	....	....
1912	203– 7	243	41– 9	65	24–15	33	31– 8	38	32– 4	36	31– 1	32	18– 6	18	23–12	21	2.00	....
1913	126– 6	143	17– 6	27	12– 5	16	20– 4	24	23– 6	26	14–11	15	18–12	18	19–10	17	.33	....
1914	45– 1	60	19– 8	30	8– 6	11	6–10	8	5–10	6	2–12	3	2– 3	2	0– 0	0	4.33	....
1915	15–11	16	1– 8	2	0–14	1	3–12	4	3–13	4	1– 0	1	2– 5	2	2– 7	2	4.33	....
Average	116.9	131	20.1	31	11.2	15	15.9	19	16.9	19	12.8	13	13.8	13	26.0	21	2.75	....
Standard grade—																		
1910	58–15	86	19–10	34	12–15	19	12– 8	17	5– 9	7	5– 5	6	1–15	2	1– 1	1	....	....
1911	43– 7	45	6–15	11	4– 4	5	4– 7	5	5–14	6	4– 4	4	2– 4	2	15– 7	12	....	....
1912	48– 3	62	20–11	32	3–15	5	6–10	8	7– 5	8	5– 2	5	2– 2	2	2– 6	2	4.83	....
1913	30– 9	38	5–15	11	4–10	6	4– 4	5	6– 7	7	4–14	5	2– 3	2	2– 4	2	1.00	....
1914	41–15	61	29–12	46	7–12	10	1–12	2	1–12	2	0–15	1	0– 0	0	0– 0	0	6.67	....
1915	19– 4	20	1– 4	2	2–11	3	4– 9	5	3–14	4	3– 4	3	1– 2	1	2– 8	2	6.00	....
Average	40.4	52	14.0	23	6.0	8	5.7	7	5.1	5	4.0	4	1.7	2	4.0	3	4.63	....
Cull fruits—																		
1912	2–13	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	7– 5	27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	12– 6	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....
1915	3– 9	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....
Average	6.5	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....
Total crop—																		
1910	171– 3	235	55– 2	90	32–14	46	33–13	44	23–15	28	12– 8	14	5–11	6	7– 4	7	....	....
1911	241 3	218	11–14	18	5– 2	6	16– 5	18	23– 8	24	24–10	23	40– 2	36	119–10	93	....	....
1912	254– 7	311	62– 4	97	28–14	38	38– 2	46	39– 9	44	36– 3	37	20– 8	20	26– 2	23	3.89	2
1913	164– 4	208	23– 5	38	16–15	22	24– 8	29	29–13	33	19– 9	20	20–15	20	21–14	19	.67	0
1914	99– 6	149	49– 4	76	16– 2	21	8– 6	10	7– 6	8	3–11	4	2– 3	2	0– 0	0	4.89	0
1915	38– 0	42	2–12	4	3– 9	4	8– 5	9	7–11	8	4– 4	4	3– 7	3	4–15	4	4.67	4
Average	**161.5**	**194**	**34.1**	**54**	**17.2**	**23**	**21.6**	**26**	**22.0**	**24**	**16.8**	**17**	**15.5**	**15**	**30.0**	**24**	**3.53**	**1.50**

TABLE III.—*Detailed statement of the annual performane of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
22. Tree No. 23-61-14, Alternate-Bearing strain: Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	120–15	154	29– 6	46	18–14	25	26–15	33	17– 3	20	11– 2	12	13–11	14	3–12	4	....	....
1911	243– 2	251	18– 8	28	17– 8	22	30– 3	35	31–10	34	39– 0	39	34– 4	33	72– 1	60	....	....
1912	105– 0	102	2– 9	4	5– 5	7	7– 6	9	11–13	13	16– 9	17	15–14	15	45– 8	37	1.67	....
1913	148– 0	172	26–11	41	14–11	19	23– 8	28	36–14	41	18– 2	18	10–10	10	17– 8	15	0	....
1914	26– 5	35	14–13	22	3– 4	4	4– 6	5	1–13	2	2– 1	2	0– 0	0	0– 0	0	6.67	....
1915	69–15	78	16– 2	22	8– 6	11	11–14	13	14–12	15	10–10	10	4– 9	4	3–10	3	5.33	....
Average	118.9	132	18.0	27	11.3	15	17.4	21	19.0	21	16.3	16	13.2	13	23.7	20	3.42	....
Standard grade—																		
1910	67– 0	102	32–10	54	4–11	8	11– 3	16	6– 5	9	6– 1	8	4– 2	5	2– 0	2	....	....
1911	40– 8	47	6– 0	11	3–12	5	2–10	3	7– 6	8	6–12	7	3–14	4	10– 2	9	....	....
1912	17–11	19	1– 4	2	1– 8	2	3– 8	4	2–10	3	1–15	2	0– 0	0	6–14	6	.83	....
1913	33–14	53	16–15	34	2– 5	3	2– 9	3	8– 3	9	2–14	3	1– 0	1	0– 0	0	.50	....
1914	29– 0	43	23– 1	36	2– 8	3	2– 9	3	0–14	1	0– 0	0	0– 0	0	0– 0	0	6.67	....
1915	36–14	42	8– 0	12	8– 8	10	6– 5	7	4–14	5	4– 6	4	3– 8	3	1– 5	1	6.67	....
Average	37.5	51	14.7	25	3.9	5	4.8	6	5.0	6	3.6	4	2.1	2	3.4	3	3.67	....
Cull fruits—																		
1912	2– 5	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	8–14	42	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	4–15	11	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....
1915	4– 8	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.00	....
Average	5.2	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.17	....

Total crop—																		
1910	187-15	256	62-0	100	23-9	33	38-2	49	23-8	29	17-3	20	17-13	19	5-12	6	....	....
1911	283-10	298	24-8	39	21-4	27	32-13	38	39-0	42	45-12	46	38-2	37	82-3	69	....	....
1912	125-0	125	3-13	6	6-13	9	10-14	13	14-7	16	18-8	19	15-14	15	52-6	43	1.33	1
1913	190-12	267	43-10	75	17-0	22	26-1	31	45-1	50	21-0	21	11-10	11	17-8	15	.20	0
1914	60-4	89	37-14	58	5-12	7	6-15	8	2-11	3	2-1	2	0-0	0	0-0	0	5.89	1
1915	111-5	127	24-2	34	16-14	21	18-3	20	19-10	20	15-0	14	8-1	7	4-15	4	5.33	5
Average	**159.8**	**194**	**32.7**	**52**	**15.2**	**20**	**22.2**	**27**	**24.1**	**27**	**19.9**	**20**	**15.3**	**15**	**27.1**	**23**	**3.19**	**1.75**
23. Tree No. 23-62-21, Marsh strain:																		
Ivory-White grade—																		
1910	79-2	87	10-11	17	8-6	11	8-15	11	7-13	9	7-3	8	5-13	6	30-5	25	....	....
1911	119-13	112	7-2	10	3-4	4	11-13	13	2-13	4	12-5	12	25-2	24	57-6	45	....	....
1912	160-14	185	20-12	36	8-1	11	25-0	31	26-4	30	16-11	18	23-3	23	40-15	36	0	....
1913	113-14	131	18-8	27	18-13	24	15-4	18	23-9	26	17-14	18	10-8	10	9-6	8	.33	....
1914	88-7	129	59-4	94	16-11	21	7-10	9	4-14	5	0-0	0	0-0	0	0-0	0	3.67	....
1915	65-8	71	13-15	19	10-5	12	9-3	10	7-10	8	10-9	10	6-10	6	7-4	6	4.00	....
Average	104.6	119	21.7	34	10.9	14	13.0	15	12.2	14	10.8	11	11.9	12	24.2	20	2.00	....
Standard grade—																		
1910	25-13	36	7-14	14	2-13	4	2-15	4	3-8	5	0-13	1	4-8	5	3-6	3	....	....
1911	34-10	37	7-13	11	4-3	5	5-7	6	2-15	3	0-0	0	5-5	5	8-15	7	....	....
1912	70-9	77	5-11	10	6-14	9	4-13	6	8-13	10	12-5	13	8-2	8	23-15	21	.33	....
1913	53-10	66	15-14	25	6-8	8	7-4	9	9-15	11	4-13	5	2-4	2	7-0	6	1.67	....
1914	57-14	87	37-3	62	11-6	15	5-4	6	0-15	1	3-2	3	0-0	0	0-0	0	4.00	....
1915	58-9	66	15-11	22	9-9	11	11-0	12	11-6	11	8-10	8	1-2	1	1-3	1	5.67	....
Average	50.2	62	15.0	24	6.9	9	6.1	8	6.2	7	4.9	5	3.5	3	7.4	6	2.92	....
Cull fruits—																		
1912	4-0	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	7-2	43	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	14-2	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....
1915	5-2	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.33	....
Average	7.6	23	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.50	....
Total crop—																		
1910	104-15	123	18-9	31	11-3	15	11-14	15	11-5	14	8-0	9	10-5	11	33-11	28	....	....
1911	154-7	149	14-15	21	7-7	9	17-4	19	5-12	7	12-5	12	30-7	29	66-5	52	....	....
1912	235-7	269	26-7	46	14-15	20	29-13	37	35-1	40	29-0	31	31-5	31	64-14	57	.22	0
1913	174-10	240	34-6	52	25-5	32	22-8	27	33-8	37	22-11	23	12-12	12	16-6	14	1.00	1
1914	160-7	249	96-7	156	28-1	36	12-14	15	5-13	6	3-2	3	0-0	0	0-0	0	3.78	1
1915	129-3	145	29-10	41	19-14	23	20-3	22	19-0	19	19-3	18	7-12	7	8-7	7	4.33	4
Average	**159.8**	**196**	**36.7**	**58**	**17.8**	**23**	**19.1**	**23**	**18.4**	**21**	**15.7**	**16**	**15.4**	**15**	**31.6**	**26**	**2.33**	**1.50**

TABLE III.—*Detailed statement of the annual performance of Mash grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
24. **Tree** No. 23-59-14, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	110- 2	124	14- 4	23	6- 9	9	6- 3	8	18-13	22	16- 7	18	18- 4	18	29-10	26	....	....
1911	159-13	144	14- 1	19	9- 6	11	10- 2	11	9-14	10	8- 3	8	21- 3	19	87- 0	66	....	....
1912	117- 4	144	24-13	41	9-12	13	13- 7	17	21-13	25	20- 8	22	12- 7	13	14- 8	13	0.67	....
1913	164- 8	194	26-11	41	27- 0	35	27-14	33	30-10	34	24-14	26	10- 3	10	17- 4	15	0	....
1914	56- 1	77	26-11	41	14- 9	19	8- 7	10	5- 8	6	0-14	1	0- 0	0	0- 0	0	5.00	....
1915	22-13	22	0-13	1	3-10	4	3-12	4	3- 2	3	5- 7	5	2- 6	2	3-11	3	4.00	....
Average	105.1	118	17.9	28	11.8	15	11.6	14	15.0	17	12.7	13	10.8	10	25.3	21	2.42	....
Standard grade—																		
1910	44-10	56	5- 2	9	3-14	6	2-10	4	9-12	12	11-12	13	4- 5	5	7- 3	7	....	....
1911	38-11	48	9-13	17	6-11	8	2-10	3	3-11	5	0-15	1	3- 3	4	11-12	10	....	....
1912	97- 1	118	13- 2	21	9-12	13	27- 6	34	16- 3	19	9- 6	10	13- 9	14	7-11	7	.50	....
1913	51-15	65	12- 2	21	6-15	9	8- 5	10	12- 2	13	4-12	5	3- 5	3	4- 6	4	1.33	....
1914	47-10	68	26- 0	42	10- 0	13	4- 4	5	5- 8	6	1-14	2	0- 0	0	0- 0	0	4.33	....
1915	21-11	22	2- 8	4	4- 7	5	1-14	2	4- 4	4	3- 5	3	1- 4	1	4- 1	3	2.33	....
Average	50.2	63	11.4	19	7.0	9	7.9	10	8.5	10	5.2	6	4.2	5	5.9	5	2.12	....
Cull fruits—																		
1912	2- 1	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	7- 8	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	14-12	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.00	....
1915	2-11	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.50	....
Average	6.7	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.12	....

Total crop—																		
1910	154–12	180	19– 6	32	10– 7	15	8–13	12	28– 9	34	28– 3	34	22– 9	23	36–13	33	...	...
1911	198– 8	192	23–14	36	16– 1	19	12–12	14	13– 9	15	9– 2	9	24– 6	23	98–12	76	...	...
1912	215– 6	265	37–15	62	19– 8	26	40–13	51	38– 0	44	28–14	32	26– 0	27	22– 3	20	.56	0
1913	223–15	276	38–13	62	33–15	44	36– 3	43	42–12	47	29–10	31	13– 8	13	21–10	19	.67	1
1914	118– 7	176	52–11	83	24– 9	32	12–11	15	11– 0	12	2–12	3	0– 0	0	0– 0	0	4.11	0
1915	47– 3	48	3– 5	5	8– 1	9	5–10	6	7– 6	7	8–12	8	3–10	3	7–12	6	3.75	2
Average	**159.7**	**190**	**29.3**	**47**	**18.8**	**24**	**19.5**	**24**	**23.5**	**27**	**17.9**	**19**	**15.0**	**15**	**31.2**	**26**	**2.25**	**0.75**
25. Tree No. 23–62–15, Alternate-Bearing strain: Ivory-White grade—																		
1910	146– 2	194	51–14	78	24– 8	33	36– 4	45	23– 2	27	7– 0	8	0– 0	0	3– 6	3	...	...
1911	171–10	131	2– 7	4	0– 0	0	5– 6	6	8–15	9	13–11	13	9–10	9	131– 9	90	...	...
1912	173– 8	213	48– 3	74	23– 8	30	31–13	38	17– 4	19	26–12	28	14– 8	14	11– 8	10	2.00	...
1913	85– 5	95	9–11	15	15–10	20	11–12	14	12– 2	13	7– 2	7	17– 2	16	11–14	10	.67	...
1914	51– 2	74	31–10	50	10– 1	13	4– 2	5	4– 6	5	0–15	1	0– 0	0	0– 0	0	7.33	...
1915	60–12	64	8– 4	12	5– 2	6	8– 2	9	15– 0	15	13–13	13	7–15	7	2– 8	2	4.33	...
Average	114.7	129	25.3	39	13.1	17	16.3	20	13.5	15	11.6	12	8.2	8	26.8	19	2.39	...
Standard grade—																		
1910	53– 9	82	23– 4	41	5– 1	8	8–15	13	10– 5	13	1–14	2	4– 2	5	0– 0	0	...	...
1911	23– 7	21	0– 0	0	0– 0	0	2– 6	3	2–13	3	1–13	2	4– 2	4	12– 5	9	...	...
1912	66– 9	91	29– 7	47	13–11	18	6– 8	8	8–14	10	5– 0	5	1–15	2	1– 2	1	2.20	...
1913	16– 3	24	5– 5	12	1– 8	2	2– 6	3	3– 9	4	1– 1	1	1– 3	1	1– 3	1	3.67	...
1914	41–12	65	28–13	49	6– 2	8	5– 0	6	1–13	2	0– 0	0	0– 0	0	0– 0	0	5.33	...
1915	24– 4	27	5– 0	8	2–10	3	2–14	3	6– 0	6	4– 4	4	2– 4	2	1– 4	1	5.33	...
Average	37.6	51	15.3	26	4.9	7	4.7	6	5.5	6	2.3	2	2.3	2	2.6	2	4.13	...
Cull fruits—																		
1912	11–12	21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1913	7– 2	23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1914	13– 6	31	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5.67	...
1915	2– 3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.33	...
Average	8.6	20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.00	...
Total crop—																		
1910	199–11	276	75– 2	119	29– 9	41	45– 3	58	33– 7	40	8–14	10	4– 2	5	3– 6	3	...	...
1911	195– 1	152	2– 7	4	0– 0	0	7–12	9	11–12	12	15– 8	15	13–12	13	143–14	99	...	...
1912	251–13	325	77–10	121	37– 3	48	38– 5	46	26– 2	29	31–12	33	16– 7	16	12–10	11	2.13	0
1913	108–10	142	15– 0	27	17– 2	22	14– 2	17	15–11	17	8– 3	8	18– 5	17	13– 1	11	2.17	0
1914	106– 4	170	60– 7	99	16– 3	21	9– 2	11	6– 3	7	0–15	1	0– 0	0	0– 0	0	6.11	1
1915	87– 3	94	13– 4	20	7–12	9	11– 0	12	21– 0	21	18– 1	17	10– 3	9	3–12	3	5.33	0
Average	**158.1**	**193**	**40.6**	**65**	**18.0**	**24**	**20.9**	**26**	**19.0**	**21**	**13.9**	**14**	**10.5**	**10**	**29.4**	**21**	**3.94**	**0.25**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
26. Tree No. 23-59-9, Alternate-Bearing strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	130- 4	175	56- 3	84	11-10	16	29-11	37	19-11	23	7-14	9	4- 1	4	1- 2	2	......	......
1911	126- 8	105	0-11	1	1-10	2	7- 0	8	6- 4	6	10- 7	10	24- 0	21	76- 8	57	......	......
1912	193- 1	213	120- 3	123	23-11	32	24-15	31	11-15	14	8- 6	9	2-14	3	1- 1	1	2.67	......
1913	91- 0	102	8-10	14	11-11	15	14-13	17	20- 5	22	12-11	13	10- 8	10	12- 6	11	.33	......
1914	57-14	79	30-15	47	15- 2	19	4- 5	5	6- 8	7	1- 0	1	0- 0	0	0- 0	0	5.33	......
1915	40- 4	46	11-10	17	4- 3	5	6- 4	7	5-14	6	3- 0	3	8- 1	7	1- 4	1	5.67	......
Average	106.5	120	38.1	48	11.3	15	14.5	18	11.8	13	7.2	8	8.3	8	15.4	12	3.50	......
Standard grade—																		
1910	45-11	68	18- 9	32	5-11	9	10-10	14	7- 2	9	2-11	3	1- 0	1	0- 0	0	......	......
1911	30-12	32	1- 6	3	7- 2	8	4-12	5	3- 2	3	4- 1	4	6-12	6	3- 9	3	......	......
1912	69- 6	99	31-12	53	12-10	17	11- 8	14	7-14	9	5-10	6	0- 0	0	0- 0	0	.50	......
1913	38-12	57	14- 4	31	4-12	6	4- 4	5	6-14	7	5- 4	5	1- 0	1	2- 6	2	5.33	......
1914	43- 3	63	31- 6	49	7- 6	9	1-10	2	2-13	3	0- 0	0	0- 0	0	0- 0	0	6.00	......
1915	36-11	42	8- 8	13	5-12	7	9- 6	10	4-14	5	2- 2	2	4-11	4	1- 6	1	4.67	......
Average	44.1	60	17.6	30	7.2	9	7.0	8	5.4	6	3.3	3	2.2	2	1.2	1	4.13	......
Cull fruits—																		
1912	4- 0	11	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	7- 2	30	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	11-13	30	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.33	......
1915	16- 0	24	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3.00	......
Average	9.7	24	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3.67	......

Total crop—																		
1910	175–15	243	74–12	116	17– 5	25	40– 5	51	26–13	32	10– 9	12	5– 1	5	1– 2	2	......	......
1911	157– 4	137	2– 1	4	8–12	10	11–12	13	9– 6	9	14– 8	14	30–12	27	80– 1	60	......	......
1912	266– 7	323	151–15	176	36– 5	49	36– 7	45	19–13	23	14– 0	15	2–14	3	1– 1	1	.58	0
1913	136–14	189	22–14	45	16– 7	21	19– 1	22	27– 3	29	17–15	18	11– 8	11	14–12	13	2.83	0
1914	112–14	172	62– 5	96	22– 8	28	5–15	7	9– 5	10	1– 0	1	0– 0	0	0– 0	0	5.22	0
1915	92–15	112	20– 2	30	9–15	12	15–10	17	10–12	11	5– 2	5	12–12	11	2–10	2	4.44	2
Average	**157.1**	**196**	**55.7**	**78**	**18.5**	**24**	**21.5**	**26**	**17.2**	**19**	**10.5**	**11**	**10.5**	**10**	**16.6**	**13**	**3.27**	**0.50**
27. Tree No. 23-59-10, Marsh strain:																		
Ivory-White grade—																		
1910	86–12	68	0– 0	0	0–14	1	0– 0	0	0–15	1	1–13	2	7– 1	7	76– 1	57	......	......
1911	184–11	198	19– 0	26	22– 5	28	29–10	34	29–11	32	28–13	29	22– 5	21	32–15	28	......	......
1912	167– 5	180	10– 3	16	7– 7	10	28–10	35	25– 5	30	17–15	19	21– 4	21	56– 9	49	.67	......
1913	102–14	118	7–14	12	18– 3	23	22– 0	26	26– 2	29	11–10	12	11– 9	11	5– 8	5	1.67	......
1914	62– 2	78	19–10	28	15–15	20	11–14	14	7– 4	8	5– 7	6	2– 0	2	0– 0	0	5.00	......
1915	65– 9	64	4– 2	6	2–10	3	6– 4	7	18–10	19	8– 8	8	12– 9	11	12–14	10	5.00	......
Average	111.6	118	10.1	15	11.2	14	16.4	19	18.0	20	12.4	13	12.8	12	30.7	25	3.09	......
Standard grade—																		
1910	15–10	17	2– 0	3	0– 0	0	0–14	1	1–13	2	0–15	1	3– 8	4	6– 8	6	......	......
1911	56– 5	70	19– 5	29	8–14	11	11– 3	13	7– 5	8	5– 1	5	1– 1	1	3– 8	3	......	......
1912	53– 2	61	5– 1	9	3– 9	5	7– 6	9	8– 2	9	12– 1	13	5– 2	5	11–13	11	1.33	......
1913	38– 2	52	17–12	29	7–14	10	1– 9	2	4– 8	5	3– 2	3	2– 2	2	1– 3	1	5.00	......
1914	47– 6	65	24–11	38	9– 6	12	4– 2	5	3– 7	4	2–11	3	3– 1	3	0– 0	0	3.67	......
1915	25–12	25	2–14	4	1–10	2	3–12	4	6– 3	6	1– 2	1	5–14	5	4– 5	3	3.67	......
Average	39.4	48	12.0	18	5.2	7	4.8	6	5.2	6	4.1	4	3.4	4	4.5	4	3.42	......
Cull fruits—																		
1912	3–13	7	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	10– 8	47	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	17–13	37	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.67	......
1915	1– 5	2	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.00	......
Average	8.4	23	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.84	......
Total crop—																		
1910	102– 6	85	2– 0	3	0–14	1	0–14	1	2–12	3	2–12	3	10– 9	11	82– 9	63	......	......
1911	241– 0	268	38– 5	55	31– 3	39	40–13	47	37– 0	40	33–14	34	23– 6	22	36– 7	31	......	......
1912	224– 4	248	15– 4	25	11– 0	15	36– 0	44	33– 7	39	30– 0	32	26– 6	26	68– 6	60	1.11	0
1913	151– 8	217	25–10	41	26– 1	33	23– 9	28	30–10	34	14–12	15	13–11	13	6–11	6	3.33	0
1914	127– 5	180	44– 5	66	25– 5	32	16– 0	19	10–11	12	8– 2	9	5– 1	5	0– 0	0	4.44	2
1915	92–10	91	7– 0	10	4– 4	5	10– 0	11	24–13	25	9–10	9	18– 7	16	17– 3	13	4.50	1
Average	**156.5**	**182**	**22.1**	**33**	**16.4**	**21**	**21.2**	**25**	**23.2**	**26**	**16.5**	**17**	**16.2**	**16**	**35.2**	**29**	**3.35**	**0.75**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
28. Tree No. 23-62-13, Alternate-Bearing strain: Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	130- 6	169	42- 4	64	15- 6	21	30- 7	38	18-11	22	11- 4	12	5-12	6	6-10	6	....	....
1911	142- 7	135	3-13	6	9- 5	11	19- 4	21	12- 7	13	21- 8	21	23-14	22	52- 4	41	....	....
1912	144- 8	174	27- 7	42	12-13	17	29-13	37	29-15	34	19-12	21	10- 2	10	14-10	13	0.33	....
1913	60- 6	70	10- 4	15	8-14	11	13- 6	16	10- 0	11	9- 2	9	4- 5	4	4- 7	4	.33	....
1914	76-14	110	43- 0	68	21-10	28	5-14	7	5- 8	6	0-14	1	0- 0	0	0- 0	0	5.67	....
1915	70-11	76	11- 8	16	5- 4	6	12- 6	14	24-13	25	9-10	9	5-14	5	1- 4	1	6.67	....
Average	104.2	122	23.0	35	12.2	16	18.5	22	16.9	19	12.0	12	8.2	8	13.2	11	3.25	....
Standard grade—																		
1910	52-15	79	23-13	40	4-10	7	12-11	17	7-11	10	3- 2	4	1- 0	1	0- 0	0	....	....
1911	46- 1	47	2-14	4	1- 7	2	6- 4	7	8- 3	9	6-13	7	11-15	11	8- 9	7	....	....
1912	65- 1	82	23- 1	36	3-15	5	9- 1	11	6-14	8	9- 8	10	6-10	6	6-10	6	2.50	....
1913	33-10	42	12- 2	18	7- 6	9	5- 3	6	4- 9	5	3- 2	3	0- 0	0	1- 4	1	6.00	....
1914	39- 3	57	24- 2	38	5-15	8	7- 6	9	1-12	2	0- 0	0	0- 0	0	0- 0	0	6.00	....
1915	31- 6	36	5-14	10	3- 6	4	5- 6	6	10- 2	10	3- 3	3	2- 3	2	1- 4	1	4.67	....
Average	44.7	57	15.4	25	4.5	6	7.7	9	6.5	7	4.3	5	3.7	3	2.9	2	4.79	....
Cull fruits—																		
1912	6- 3	11	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	8- 8	35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	8- 7	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.00	....
1915	3- 2	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.67	....
Average	6.6	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.35	....

Total crop—																		
1910	183- 5	248	66- 1	104	20- 0	28	43- 2	55	26- 6	32	14- 6	16	6-12	7	6-10	6	....	....
1911	188- 8	182	6-11	10	10-12	13	25- 8	28	20-10	22	28- 5	28	35-13	33	60-13	48	....	....
1912	215-12	267	50- 8	78	16-12	22	38-14	48	36-13	42	29- 4	31	16- 2	13	21- 4	19	1.78	0
1913	102- 8	147	22- 6	33	16- 4	20	18- 9	22	14- 9	16	12- 4	12	4- 5	4	5-11	5	3.17	1
1914	124- 8	186	67- 2	106	27- 9	36	13- 4	16	7- 4	8	0-14	1	0- 0	0	0- 0	0	4.89	1
1915	105- 3	117	17- 6	26	8-10	10	17-12	20	34-15	35	12-13	12	8- 1	7	2- 8	2	5.67	0
Average	**153.3**	**191**	**38.4**	**60**	**16.7**	**22**	**26.2**	**31**	**23.4**	**26**	**16.3**	**17**	**11.9**	**11**	**16.1**	**13**	**3.88**	**0.50**
29. Tree No. 23-61-15, Marsh strain:																		
Ivory-White grade—																		
1910	126- 6	128	5- 5	8	4- 5	6	12- 2	15	21- 7	23	18- 1	19	12- 4	12	52-14	45	....	....
1911	226-10	249	21- 0	31	22-10	29	46-12	54	42- 3	45	34-12	35	30- 0	29	29- 5	26	....	....
1912	122-13	118	3-15	6	2- 4	3	6- 9	8	15- 4	17	17- 3	18	17- 7	17	60- 3	49	0	....
1913	97- 9	119	20- 0	31	19- 7	25	13- 7	16	15-12	18	19- 5	20	6- 4	6	3- 6	3	1.33	....
1914	32-13	46	18- 7	29	7- 2	9	3- 9	4	2-12	3	0-15	1	0- 0	0	0- 0	0	7.00	....
1915	78- 9	89	19-13	28	11- 0	13	15- 4	17	13-14	14	12-14	12	3- 5	3	2- 7	2	6.00	....
Average	114.1	125	14.8	22	11.1	14	16.3	19	18.5	20	17.2	17	11.5	11	24.7	21	3.58	....
Standard grade—																		
1910	38- 0	47	2-15	5	3- 2	5	5-12	8	6-15	9	5- 1	6	4- 4	5	9-15	9	....	....
1911	36- 8	45	7- 1	14	4- 2	5	4- 3	5	3-10	4	5-11	6	4- 1	4	7-12	7	....	....
1912	25-10	26	2- 2	3	0- 0	0	0-13	1	7- 2	8	2- 1	2	3- 3	3	10- 5	9	.67	....
1913	38- 1	49	12-12	21	4-11	6	5-15	7	6-10	7	5-15	6	1- 0	1	1- 2	1	4.00	....
1914	38- 6	58	26- 1	43	10- 8	13	0-14	1	0-15	1	0- 0	0	0- 0	0	0- 0	0	4.00	....
1915	28- 1	34	9- 5	14	4- 4	5	7- 4	8	3-15	4	1- 0	1	1- 1	1	1- 4	1	5.33	....
Average	34.1	43	10.0	17	4.5	6	4.1	5	4.9	6	3.3	4	2.3	3	5.1	4	3.50	....
Cull fruits—																		
1912	2- 7	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	10-10	40	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	13- 3	27	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.00	....
1915	0- 9	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	8.00	....
Average	6.7	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
Total crop—																		
1910	164- 6	175	8- 4	13	7- 7	11	17-14	23	28- 6	32	23- 2	25	16- 8	17	62-13	54	....	....
1911	263- 2	294	28- 1	45	26-12	34	50-15	59	45-13	49	40- 7	41	34- 1	33	37- 1	33	....	....
1912	150-14	147	6- 1	9	2- 4	3	7- 6	9	22- 6	25	19- 4	20	20-10	20	70- 8	58	.44	0
1913	146- 4	208	32-12	52	24- 2	31	19- 6	23	22- 6	25	25- 4	26	7- 4	7	4- 8	4	2.67	0
1914	84- 6	131	44- 8	72	17-10	22	4- 7	5	3-11	4	0-15	1	0- 0	0	0- 0	0	4.56	0
1915	107- 3	124	29- 2	42	15- 4	18	22- 8	25	17-13	18	13-14	13	4- 6	4	3-11	3	6.00	0
Average	**152.7**	**180**	**24.8**	**39**	**15.6**	**20**	**20.4**	**24**	**23.4**	**26**	**20.5**	**21**	**13.8**	**14**	**29.8**	**25**	**3.42**	**0**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
30. Tree No. 23-62-17, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	100- 0	133	33- 5	51	21-10	29	13-15	18	15-11	19	8- 1	9	7- 6	7	0- 0	0	....	....
1911	96- 6	68	0- 0	0- 0	0- 0	0	0-15	1	7- 4	7	4- 4	4	4-13	4	79- 2	52	....	....
1912	135- 1	181	48- 0	76	24- 6	33	22- 8	28	18- 7	21	13-11	15	4-15	5	3- 2	3	1.67	....
1913	89-15	92	3- 5	5	3- 1	4	10- 0	12	20- 4	22	17- 0	17	13-13	13	22- 8	19	3.33	....
1914	38- 2	53	19- 8	31	7-12	10	5- 2	6	3-10	4	1- 0	1	1- 2	1	0- 0	0	4.00	....
1915	107- 9	116	24- 7	33	8- 8	10	21-15	24	20-12	21	19- 4	18	3- 8	3	9- 3	7	4.00	....
Average	94.5	107	21.4	33	10.9	14	12.4	15	14.3	16	10.5	11	5.9	5	19.0	14	3.25	....
Standard grade—																		
1910	80-10	121	46-13	76	10- 8	15	12-12	17	5-15	8	3-10	4	1- 0	1	0- 0	0	....	....
1911	23-11	19	0- 0	0	0- 0	0	1- 0	1	1- 2	1	4- 6	4	4- 8	4	12-11	9	....	....
1912	97- 3	134	41- 5	66	19- 6	26	17-15	22	11- 8	13	2-14	3	2- 2	2	2- 1	2	2.17	....
1913	32-10	35	1- 1	2	6- 7	8	2- 5	3	8- 2	9	6- 2	6	2- 3	2	6- 6	5	3.00	....
1914	33- 0	53	27- 1	46	3- 1	4	0- 0	0	2-14	3	0- 0	0	0- 0	0	0- 0	0	5.33	....
1915	34-13	38	7-12	11	4- 2	5	9- 7	10	2-14	3	4- 6	4	2- 7	2	3-13	3	6.33	....
Average	50.3	67	20.7	33	7.2	10	7.2	9	5.4	6	3.6	3	2.1	2	4.2	3	4.21	....
Cull fruits—																		
1912	12- 5	22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	10- 3	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	16-14	36	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.00	....
1915	1- 5	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.50	....
Average	10.2	25	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.75	....

Total crop—																		
1910	180-10	254	80- 2	127	32- 2	44	26-11	35	21-10	27	11-11	13	8- 6	8	0- 0	0	......	......
1911	120- 1	87	0- 0	0	0- 0	0	1-15	2	8- 6	8	8-10	8	9- 5	8	91-13	61	......	......
1912	244- 9	337	89- 5	142	43-12	59	40- 7	50	29-15	34	16- 9	18	7- 1	7	5- 3	5	2.00	0
1913	132-12	165	4- 6	7	9- 8	12	12- 5	15	28- 6	31	23- 2	23	16- 0	15	28-14	24	3.17	0
1914	88- 0	142	46- 9	77	10-13	14	5- 2	6	6- 8	7	1- 0	1	1- 2	1	0- 0	0	5.11	1
1915	143-11	156	32- 3	44	12-10	15	31- 6	34	23-10	24	23-10	22	5-15	5	13- 0	10	4.75	3
Average	**151.6**	**190**	**42.1**	**66**	**18.1**	**24**	**19.6**	**24**	**19.7**	**22**	**14.1**	**14**	**8.0**	**7**	**23.1**	**17**	**3.78**	**1 00**
31. Tree No. 23-61-19, Alternate-Bearing strain: Ivory-White grade—																		
1910	95-12	130	40-15	62	10-14	15	22- 2	28	13-10	16	5- 2	6	3- 1	3	0- 0	0	......	......
1911	68- 6	50	0- 0	0	0- 0	0	8-12	9	6- 4	6	4- 9	4	2- 5	2	46- 8	29	......	......
1912	160- 0	200	34- 9	53	20- 0	27	38-14	48	27-11	32	15-13	17	16-14	17	6- 3	6	0	......
1913	97-15	114	16- 5	25	14- 3	18	11-12	14	24- 7	27	14-15	15	10-10	10	5-11	5	0	......
1914	55-10	78	34- 4	52	7-13	10	9- 6	11	3- 7	4	0-12	1	0- 0	0	0- 0	0	5.33	......
1915	83-10	88	13- 3	18	6- 2	7	13-12	15	22- 2	22	15-11	15	10- 4	9	2- 8	2	7.00	......
Average	93.6	110	23.2	35	9.8	13	17.4	21	16.3	18	9.5	10	7.2	7	10.2	7	3.08	......
Standard grade—																		
1910	62-13	90	27-11	44	5-15	9	21- 7	27	6-13	9	0-15	1	0- 0	0	0- 0	0	......	......
1911	42- 6	40	4-15	7	3- 8	4	7- 1	7	8- 7	8	5-14	5	3-12	3	8-13	6	......	......
1912	65-12	82	12- 5	20	7- 5	10	17-15	22	9-10	11	8-25	10	7- 0	7	2- 0	2	3.00	......
1913	51-14	63	14-13	23	5- 8	7	8- 8	10	8- 6	9	7-14	8	4- 6	4	2- 7	2	4.00	......
1914	51-14	84	42-10	72	5- 4	7	4- 0	5	0- 0	0	0- 0	0	0- 0	0	0- 0	0	3.00	......
1915	32-14	36	5-14	8	3- 5	4	6- 4	7	8-12	9	2- 0	2	5- 8	5	1- 3	1	3.33	......
Average	51.3	66	18.1	29	5.2	7	10.9	13	7.0	8	4.3	4	3.4	3	2.4	2	3.33	......
Cull fruits—																		
1912	7- 9	13	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	12-11	51	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	16-10	37	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.67	......
1915	2- 7	4	......	......	......	......	......	......	......	......	......	......	......	......	......	......	6.33	......
Average	9.8	26	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.50	......
Total crop—																		
1910	158- 9	220	68-10	106	16-13	24	43- 9	55	20- 7	25	6- 1	7	3- 1	3	0- 0	0	......	......
1911	110-12	90	4-15	7	3- 8	4	15-13	16	14-11	14	10- 7	9	6- 1	5	55- 5	35	......	......
1912	233- 5	295	46-14	73	27- 5	37	56-13	70	37- 5	43	25- 6	27	23-14	24	8- 3	8	2.00	0
1913	162- 8	228	31- 2	48	19-11	25	20- 4	24	32-13	36	22-13	23	15- 0	14	8- 2	7	2.00	1
1914	124- 2	199	76-14	124	13- 1	17	13- 6	16	3- 7	4	0-12	1	0- 0	0	0- 0	0	4.33	1
1915	118-15	128	19- 1	26	9- 7	11	20- 0	22	30-14	31	17-11	17	15-12	14	3-11	3	5.56	2
Average	**151.4**	**193**	**41.3**	**64**	**15.0**	**20**	**28.3**	**34**	**23.3**	**26**	**13.9**	**14**	**10.6**	**10**	**12.6**	**9**	**3.47**	**1.00**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
32. Tree No. 23-63-20, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	96- 9	126	31- 0	49	12-12	17	12- 7	16	11-12	14	10-11	12	9- 8	10	8- 7	8	......	......
1911	193- 4	182	5- 0	7	9-11	12	19- 1	21	22-15	24	19- 9	20	30-13	28	86- 3	70	......	......
1912	102-15	109	7- 9	11	6- 2	8	12-14	15	16- 8	18	22- 6	23	14- 8	14	23- 0	20	0	......
1913	65- 0	82	15-14	25	13-10	18	14- 8	17	13-14	15	5- 0	5	2- 2	2	0- 0	0	0	......
1914	37- 3	52	19-14	31	7-12	10	3- 5	4	6- 4	7	0- 0	0	0- 0	0	0- 0	0	5.67	......
1915	115- 8	147	48-13	72	24- 7	30	18-10	21	17- 2	18	5- 5	5	1- 3	1	0- 0	0	3.00	......
Average	101.7	116	21.3	32	12.4	16	13.5	16	14.7	16	10.5	11	9.7	9	19.6	16	2.17	......
Standard grade—																		
1910	51- 7	78	21-12	38	5-15	9	10- 8	14	7-12	10	3- 8	5	2- 0	2	0- 0	0	......	......
1911	24- 2	30	3- 8	8	5- 0	6	3- 5	4	3- 9	4	0- 0	0	5- 4	5	3- 8	3	......	......
1912	50-15	55	7-12	11	3- 1	4	12-10	14	4- 9	5	4-14	5	3- 3	3	14-14	13	2.00	......
1913	21- 3	34	9- 2	20	3-15	5	3- 6	4	3-12	4	1- 0	1	0- 0	0	0- 0	0	1.50	......
1914	20- 3	30	16- 0	25	1-10	2	0-11	1	0-14	1	1- 0	1	0- 0	0	0- 0	0	4.00	......
1915	62-13	82	30-11	47	9-15	12	6- 2	7	9-10	10	5- 4	5	1- 3	1	0- 0	0	4.50	......
Average	38.4	52	14.8	25	4.9	6	6.1	7	5.1	6	2.6	3	1.9	2	3.1	3	2.00	......
Cull fruits—																		
1912	0- 6	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	7- 9	30	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	6-14	15	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.33	......
1915	5-10	11	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.00	......
Average	5.1	14	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.17	......

Total crop—																		
1919	148- 0	204	52-12	87	18-11	26	22-15	30	19- 8	24	14- 3	17	11- 8	12	8- 7	8	....	....
1911	217- 6	212	8- 8	15	14-11	18	22- 6	25	26- 8	28	19- 9	20	36- 1	33	89-11	73	....	....
1912	154- 4	165	15- 5	22	9- 3	12	25- 8	29	21- 1	23	27- 4	28	17-11	17	37-14	33	1.25	0
1913	93-12	146	25- 0	45	17- 9	23	17-14	21	17-10	19	6- 0	6	2- 2	2	0- 0	0	.75	0
1914	64- 4	97	35-14	56	9- 6	12	4- 0	5	7- 2	8	1- 0	1	0- 0	0	0- 0	0	5.00	2
1915	183-15	240	79- 8	119	34- 6	42	24-12	28	26-12	28	10- 9	10	2- 6	2	0- 0	0	4.29	3
Average	**143.6**	**177**	**36.2**	**57**	**17.3**	**22**	**19.6**	**23**	**19.8**	**22**	**13.1**	**14**	**11.6**	**11**	**22.7**	**19**	**2.82**	**1.25**
33. Tree No. 23-60-18, Marsh strain:																		
Ivory-White grade—																		
1910	71- 0	84	16- 3	25	5-11	7	6- 4	8	11- 5	13	8- 8	9	8-12	9	14- 5	13	....	....
1911	178- 3	178	11- 2	15	8- 9	10	24- 2	27	28- 9	31	20- 7	20	40- 3	37	45- 3	38	....	....
1912	54- 7	55	3-15	6	1- 8	2	3- 4	4	5- 3	6	6-12	7	7- 4	7	26- 9	23	.67	....
1913	85- 2	108	22-15	36	15- 8	20	18-12	22	19-13	22	8- 2	8	0- 0	0	0- 0	0	.50	....
1914	51-10	72	26-11	42	9-14	13	9- 4	11	2-14	3	1-15	2	1- 0	1	0- 0	0	4.00	....
1915	88-10	100	21- 3	29	12-11	15	22-11	25	14-10	15	10- 9	10	5-10	5	1- 4	1	6.00	....
Average	88.2	100	17.0	26	9.0	11	14.0	16	13.7	15	9.4	9	10.5	10	14.6	12	2.79	....
Standard grade—																		
1910	29-11	40	8-15	15	0-12	1	4- 4	6	6-14	9	3-12	4	1-14	2	3- 4	3	....	....
1911	25- 7	28	4-10	8	1-13	2	0-13	1	4-14	5	5- 1	5	4-11	4	3- 9	3	....	....
1912	102- 0	91	3- 2	5	0-14	1	2- 4	3	5- 1	6	9-12	10	10- 7	10	70- 8	56	1.00	....
1913	49- 7	71	20- 3	37	9- 8	12	10- 6	12	4- 8	5	4-14	5	0- 0	0	0- 0	0	1.00	....
1914	41-11	62	32- 9	51	2- 6	3	4-14	6	1-14	2	0- 0	0	0- 0	0	0- 0	0	4.33	....
1915	49-10	56	13- 3	18	5-15	7	10-14	12	13-15	14	3- 4	3	1- 3	1	1- 4	1	6.00	....
Average	49.6	58	13.8	22	3.5	5	5.6	7	6.2	7	4.4	5	3.0	3	13.1	11	3.08	....
Cull fruits—																		
1912	5- 8	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	11- 3	38	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	4- 0	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.33	....
1915	3- 5	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....
Average	6.0	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.83	....
Total crop—																		
1910	100-11	124	25- 2	40	6- 7	8	10- 8	14	18- 3	22	12- 4	13	10-10	11	17- 9	16	....	....
1911	203-10	206	15-12	23	10- 6	12	24-15	28	33- 7	36	25- 8	25	44-14	41	48-12	41	....	....
1912	161-15	152	7- 1	11	2- 6	3	5- 8	7	10- 4	12	16- 8	17	17-11	17	97- 1	79	.89	0
1913	145-12	217	43- 2	73	25- 0	32	29- 2	34	24- 5	27	13- 0	13	0- 0	0	0- 0	0	.75	0
1914	97- 5	147	59- 4	93	12- 4	16	14- 2	17	4-12	5	1-15	2	1- 0	1	0- 0	0	3.89	2
1915	141- 9	160	34- 6	47	18-10	22	33- 9	37	28- 9	29	13-13	13	6-13	6	2- 8	2	5.44	3
Average	**141.8**	**168**	**30.8**	**48**	**12.5**	**16**	**19.6**	**23**	**19.9**	**22**	**13.8**	**14**	**13.5**	**13**	**27.6**	**23**	**2.74**	**1.25**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
34. Tree No. 23-61-16, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	123–11	161	33– 9	52	19– 7	26	25–12	33	18– 8	22	18– 6	20	4–13	5	3– 4	3	....	....
1911	159– 2	127	1–15	3	0–13	1	7–10	8	9–11	10	4– 3	4	24– 7	21	110– 7	80	....	....
1912	138– 0	165	19–12	32	14–15	20	29– 4	37	16– 1	19	22– 4	24	13–15	14	21–13	19	3.00	....
1913	66– 2	72	9– 3	14	6– 4	8	2– 7	3	9– 7	10	17–11	18	6– 4	6	14–14	13	1.67	....
1914	20– 4	30	13–12	22	3– 2	4	0–12	1	2–10	3	0– 0	0	0– 0	0	0– 0	0	4.67	....
1915	71– 4	78	14–15	20	6– 8	8	7–13	9	17– 6	18	14– 9	14	7–10	7	2– 7	2	6.33	....
Average	96.4	106	15.5	24	8.5	11	12.3	15	12.3	14	12.8	13	9.5	9	25.5	20	3.92	....
Standard grade—																		
1910	53– 0	75	14–13	25	8–13	13	9–12	13	9–11	12	8–13	10	1–12	2	0– 0	0	....	....
1911	39–11	36	2– 9	5	3– 4	4	0– 0	0	5– 8	5	1– 1	1	4–10	4	22–11	17	....	....
1912	55– 1	68	9–15	17	7– 5	10	6– 4	8	15– 2	17	5– 7	6	5– 3	5	5–13	5	2.33	....
1913	38– 4	49	11– 0	20	7–11	10	3–10	4	1–14	2	5– 3	5	4– 5	4	4– 9	4	3.00	....
1914	31– 1	49	18– 1	33	6– 4	8	4– 2	5	2–10	3	0– 0	0	0– 0	0	0– 0	0	4.33	....
1915	36– 3	40	5– 0	8	3– 5	4	9–12	11	4–13	5	6– 6	6	4– 9	4	2– 6	2	5.67	....
Average	42.2	53	10.3	18	6.1	8	3.5	7	6.6	7	4.4	5	3.4	3	5.9	4	3.83	....
Cull fruits—																		
1912	1– 6	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	6–13	29	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	7– 0	20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....
1915	2– 0	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.00	....
Average	4.3	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.17	....

Total crop—																		
1910	176-11	236	48- 6	77	28- 4	39	35- 8	46	28- 3	34	26- 9	30	6- 9	7	3- 4	3	....	....
1911	198-13	163	4- 8	8	4- 1	5	7-10	8	15- 3	15	5- 4	5	29- 1	25	133- 2	97	....	....
1912	194- 7	236	29-11	49	22- 4	30	35- 8	45	31- 3	36	27-11	30	19- 2	19	27-10	24	2.56	12
1913	111- 3	150	20- 3	34	13-15	18	6- 1	7	11- 5	12	22-14	23	10- 9	10	19- 7	17	2.33	0
1914	58- 5	99	31-13	55	9- 6	12	4-14	6	5- 4	6	0- 0	0	0- 0	0	0- 0	0	4.44	2
1915	109- 7	121	19-15	28	9-13	12	17- 9	20	22- 3	23	20-15	20	12- 3	11	4-13	4	5.43	4
Average	**141.5**	**168**	**25.8**	**42**	**14.6**	**19**	**17.8**	**22**	**18.9**	**21**	**17.2**	**18**	**12.9**	**12**	**31.4**	**24**	**3.69**	**4.50**
35. Tree No. 23-60-13, Marsh strain:																		
Ivory-White grade—																		
1910	109-15	108	3- 9	5	3-13	5	10-15	13	10-10	12	15- 5	16	17- 4	17	48- 7	40	....	....
1911	185- 7	193	9-14	16	17-13	22	24- 0	27	38-13	41	31- 7	31	25- 9	24	37-15	32	....	....
1912	111-13	125	13- 8	22	9- 0	12	14-11	18	13- 5	15	13- 2	14	17- 3	17	31- 0	27	0	....
1913	71- 8	82	9- 6	14	10- 2	13	14- 7	17	16- 9	18	9-13	10	5- 5	5	5-14	5	0	....
1914	29- 3	44	20- 8	33	7- 0	9	0-13	1	0-14	1	0- 0	0	0- 0	0	0- 0	0	6.00	....
1915	29- 0	26	0-13	1	1-13	2	3-12	4	3- 0	3	5- 7	5	4-10	4	9- 9	7	4.33	....
Average	89.5	96	9.6	15	8.3	11	11.4	13	14.0	15	12.5	13	11.7	11	22.1	19	2.58	....
Standard grade—																		
1910	30-11	36	2- 0	3	1- 8	2	4- 2	6	3- 9	5	4-12	5	4- 2	5	10-10	10	....	....
1911	62-15	69	12- 2	19	3- 8	4	9- 5	10	10-10	11	7- 4	7	8- 5	8	11-13	10	....	....
1912	83- 7	93	10- 5	16	3- 1	4	7-14	10	14- 7	17	16- 6	17	11- 0	11	20- 6	18	.67	....
1913	36-15	44	7- 8	12	7-12	10	4- 5	5	9- 6	10	1- 0	1	2- 2	2	4-14	4	6.00	....
1914	47-12	72	35- 4	57	5- 8	7	3- 6	4	2- 0	3	1- 0	1	0- 0	0	0- 0	0	7.00	....
1915	16- 9	16	0-11	1	2-10	3	3-13	4	2- 0	2	1- 3	1	1- 3	1	5- 1	4	5.00	....
Average	46.4	55	11.3	18	4. 0	5	5.5	7	7.0	8	5.2	5	4.4	5	8.8	7	4.67	....
Cull fruits—																		
1912	2-10	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	7-13	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	13- 8	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
1915	1- 4	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.00	....
Average	6.3	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.50	....
Total crop—																		
1910	140-10	144	5- 9	8	5- 5	7	15- 1	19	14- 3	17	20- 1	21	21- 6	22	59- 1	50	....	....
1911	248- 6	262	22- 0	35	21- 5	26	33- 5	37	49- 7	52	38-11	38	33-14	32	49-12	42	....	....
1912	197-14	222	23-13	38	12- 1	16	22- 9	28	27-12	32	29- 8	31	28- 3	28	51- 6	45	.44	2
1913	116- 4	159	16-14	26	17-14	23	18-12	22	25-15	28	10-13	11	7- 7	7	10-12	9	3.00	0
1914	90- 7	147	55-12	90	12- 8	16	4- 3	5	3- 8	4	1- 0	1	0- 0	0	0- 0	0	6.00	1
1915	46-13	44	1- 8	2	4- 7	5	7- 9	8	5- 0	5	6-10	6	5-13	5	14-10	11	4.57	0
Average	**140.1**	**163**	**20.9**	**33**	**12.3**	**16**	**16.9**	**20**	**21.0**	**23**	**17.8**	**18**	**16.1**	**16**	**30.9**	**26**	**3.50**	**0.75**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
36. Tree No. 23-63-18, Marsh strain:																		
Ivory-White grade--	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	118- 3	161	50-13	79	16- 5	22	23- 9	29	12- 8	15	13- 0	14	2- 0	2	0- 0	0	....	....
1911	211-15	190	4- 6	7	5- 1	6	8-13	10	26- 0	27	22- 9	22	28- 8	26	116-10	92	....	....
1912	126- 2	125	5- 6	8	6- 6	8	14-12	17	16-10	18	17-10	18	17- 1	16	48- 5	40	0	....
1913	79- 2	86	7-10	12	9- 9	12	6- 9	8	19- 6	21	10-12	11	14- 0	13	11- 4	9	2.00	....
1914	41-12	54	18- 8	27	9- 9	12	7- 0	8	4-11	5	2- 0	2	0- 0	0	0- 0	0	5.67	....
1915	40- 2	37	0-12	1	5- 2	6	3-12	4	5- 0	5	5- 6	5	5-12	5	14- 6	11	3.00	....
Average	102.9	109	14.6	22	8.7	11	10.7	13	14.0	15	11.9	12	11.2	10	31.8	25	2.67	....
Standard grade—																		
1910	61- 0	95	33- 4	57	8- 7	13	11- 6	16	5- 4	6	2-11	3	0- 0	0	0- 0	0	....	....
1911	40- 1	40	3-15	7	1- 9	2	2-12	3	3-12	4	2-14	3	5- 6	5	19-13	16	....	....
1912	32- 0	34	3- 6	5	2- 6	3	3- 8	4	5-10	6	4-13	5	2- 2	2	10- 3	9	2.67	....
1913	17-10	25	4- 1	11	1-10	2	2-10	3	1-14	2	2-15	3	2- 3	2	2- 5	2	4.67	....
1914	26- 8	36	11- 6	18	9-14	12	2- 7	3	2-13	3	0- 0	0	0- 0	0	0- 0	0	5.33	....
1915	22- 7	21	0- 0	0	0-14	1	1- 0	1	8- 0	8	4- 4	4	3- 9	3	4-12	4	4.50	....
Average	33.3	42	9.3	16	4.1	6	4.0	5	4.6	5	2.9	3	2.2	2	6.1	6	4.29	....
Cull fruits—																		
1912	5-14	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	3-14	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	8- 2	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.33	....
1915	0-14	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.00	....
Average	4.7	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.67	....

Total crop—																		
1910	179-3	256	84-1	136	24-12	35	34-15	45	17-12	21	15-11	17	2-0	2	0-0	0	....	....
1911	252-0	230	8-5	14	6-10	8	11-9	13	29-12	31	25-7	25	33-14	31	136-7	108	....	....
1912	164-0	159	8-12	13	8-12	11	18-4	21	22-4	24	22-7	23	19-3	18	58-8	49	1.78	0
1913	100-10	117	11-11	23	11-3	14	9-3	11	21-4	23	13-11	14	16-3	15	13-9	11	3.33	0
1914	76-6	108	29-14	45	19-7	24	9-7	11	7-8	8	2-0	2	0-0	0	0-0	0	5.78	0
1915	63-7	60	0-12	1	6-0	7	4-12	5	13-0	13	9-10	9	9-5	8	19-2	15	3.43	3
Average	**139.3**	**156**	**23.9**	**39**	**12.8**	**17**	**14.7**	**18**	**18.6**	**20**	**14.8**	**15**	**13.4**	**12**	**37.9**	**31**	**2.39**	**0.75**
37. Tree No. 23-60-17, Marsh strain:																		
Ivory-White grade—																		
1910	44-14	53	5-2	8	3-9	5	7-3	9	8-6	10	10-4	11	2-9	3	7-13	7	....	....
1911	139-10	134	7-4	10	4-3	5	19-7	21	17-10	20	14-10	14	30-0	27	46-8	37	....	....
1912	122-8	139	14-0	21	9-13	13	23-7	28	25-15	29	19-8	20	16-9	16	18-4	12	0	....
1913	109-4	129	18-10	28	17-4	22	22-1	26	26-12	29	10-9	11	8-4	8	5-12	5	3.67	....
1914	80-6	113	43-14	68	22-8	29	8-8	10	4-8	5	1-0	1	0-0	0	0-0	0	3.00	....
1915	39-1	37	3-1	4	2-9	3	3-12	4	5-15	6	7-6	7	5-10	5	10-12	8	4.33	....
Average	89.3	101	15.3	23	10.0	13	14.0	16	14.8	17	10.6	11	10.5	10	14.0	12	2.75	....
Standard grade—																		
1910	31-0	37	2-10	4	3-1	4	5-3	7	3-9	5	6-15	8	3-15	4	5-11	5	....	....
1911	32-0	35	6-4	10	2-8	3	6-4	7	0-13	1	2-0	2	5-4	5	8-15	7	....	....
1912	76-7	81	5-3	8	6-8	9	9-1	11	7-15	9	9-5	10	10-6	10	28-1	24	1.50	....
1913	53-3	66	13-1	21	12-10	16	8-11	10	11-4	12	4-2	4	1-0	1	2-7	2	4.67	....
1914	47-9	69	25-8	41	12-5	16	4-2	6	5-10	6	0-0	0	0-0	0	0-0	0	4.67	....
1915	22-2	23	3-2	5	0-14	1	3-12	4	4-15	5	3-5	3	1-2	1	5-0	4	2.33	....
Average	43.7	52	9.3	15	6.3	8	6.2	8	5.7	6	4.2	4	3.6	3	8.4	7	3.29	....
Cull fruits—																		
1912	2-4	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	10-14	41	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	20-11	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.00	....
1915	1-8	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.50	....
Average	8.8	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.25	....
Total crop—																		
1910	75-14	90	7-12	12	6-10	9	12-6	16	11-15	15	17-3	19	6-8	7	13-8	12	....	....
1911	171-10	169	13-8	20	6-11	8	25-11	28	18-7	21	16-10	16	35-4	32	55-7	44	....	....
1912	201-3	224	19-3	29	16-5	22	32-8	39	33-14	38	28-13	30	26-15	26	41-5	36	1.00	0
1913	173-5	236	31-11	49	29-14	38	30-12	36	38-0	41	14-11	15	9-4	9	8-3	7	4.17	1
1914	148-10	200	69-6	109	34-13	45	12-10	16	10-2	11	1-0	1	0-0	0	0-0	0	3.22	1
1915	62-11	62	6-3	9	3-7	4	7-8	8	10-14	11	10-11	10	6-12	6	15-12	12	3.63	1
Average	**138.9**	**164**	**24.6**	**38**	**16.3**	**21**	**20.2**	**24**	**20.5**	**23**	**14.8**	**15**	**14.1**	**13**	**22.4**	**19**	**3.00**	**0.75**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
38. Tree No. 23-62-20, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	81-12	81	3- 4	5	2- 7	4	8- 5	10	5-15	7	7- 5	8	8-12	9	45-12	38	......	......
1911	102- 0	102	10- 4	15	10- 6	12	8- 1	9	17- 0	18	9- 4	9	14- 1	13	33- 0	26	......	......
1912	99-14	111	11-12	19	4- 7	6	9-12	12	15- 1	17	12- 1	13	20- 2	20	26-11	24	1.33	......
1913	78-12	97	16-14	26	17- 0	22	11- 0	13	16-13	19	9-12	10	5- 2	5	2- 3	2	.33	......
1914	50- 0	74	30- 8	49	9-12	14	4- 2	5	4-10	5	1- 0	1	0- 0	0	0- 0	0	5.67	......
1915	45-11	49	7-12	12	4- 2	5	6- 8	7	10- 2	10	8- 4	8	2- 5	2	6-10	5	6.00	......
Average	76.3	86	13.4	21	8.0	11	7.9	9	11.6	13	7.9	8	8.4	8	19.0	16	3.33	......
Standard grade—																		
1910	45-14	51	4- 8	7	3- 0	4	5- 2	7	2-13	3	9-14	11	6- 2	6	14- 7	13	......	......
1911	59- 0	70	15- 1	24	14- 9	17	7- 4	8	7-13	8	4- 0	4	5- 6	5	4-15	4	......	......
1912	74-10	81	3- 6	6	3-13	5	8-15	11	13- 2	15	15- 4	16	4- 2	4	26- 0	24	.50	......
1913	52- 1	70	22-14	36	9- 4	12	5-15	7	8-14	10	3- 0	3	1- 0	1	1- 2	1	4.33	......
1914	68- 6	101	38-11	65	14- 8	19	7-10	9	6- 9	7	1- 0	1	0- 0	0	0- 0	0	2.67	......
1915	43- 1	50	14-10	21	4-15	6	6- 5	7	7- 1	7	5- 5	5	2- 3	2	2-10	2	5.67	......
Average	57.2	70	16.5	27	8.4	10	6.9	8	7.7	8	6.4	7	3.1	3	8.2	7	3.29	......
Cull fruits—																		
1912	6-12	9	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	6- 9	26	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	16- 0	36	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.67	......
1915	0-14	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	6.00	......
Average	7.5	18	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.84	......

Total crop—																		
1910	127-10	132	7-12	12	5- 7	8	13- 7	17	8-12	10	17- 3	19	14-14	15	60- 3	51	....	....
1911	161- 0	172	25- 5	39	24-15	29	15- 5	17	24-13	26	13- 4	13	19- 7	18	37-15	30	....	....
1912	181- 4	201	15- 2	25	8- 4	11	18-11	23	28- 3	32	27- 5	29	24- 4	24	52-11	48	.78	0
1913	137- 6	193	39-12	62	26- 4	34	16-15	20	25-11	29	12-12	13	6- 2	6	3- 5	3	2.33	1
1914	134- 6	211	69- 3	114	24- 4	33	11-12	14	11- 3	12	2- 0	2	0- 0	0	0- 0	0	4.67	1
1915	89-10	100	22- 6	33	9- 1	11	12-13	14	17- 3	17	13- 9	13	4- 8	4	9- 4	7	5.86	4
Average	**138.5**	**168**	**29.9**	**48**	**16.4**	**21**	**14.8**	**18**	**19.3**	**21**	**14.3**	**15**	**11.5**	**11**	**27.2**	**23**	**3.41**	**1.50**
39. **Tree No. 23-62-12,** Marsh strain:																		
Ivory-White grade—																		
1910	130- 6	152	24- 5	38	13- 0	17	19- 9	24	17-15	20	17- 2	18	17- 2	17	21-5	18	....	....
1911	142- 8	169	23- 8	34	21- 2	27	27- 2	34	26- 4	29	24-10	26	12- 0	12	7-14	7	....	....
1912	108- 0	119	6- 9	11	6- 0	8	22- 5	28	16-11	19	16- 5	17	9- 8	9	30-10	27	.33	....
1913	72-11	87	7-12	14	8- 4	11	15-11	19	13- 0	15	11- 5	12	11- 0	11	5-11	5	1.33	....
1914	52-13	76	36- 2	56	7- 0	9	5- 0	6	4-11	5	0- 0	0	0- 0	0	0- 0	0	4.00	....
1915	29- 6	28	1- 7	2	1-11	2	3- 9	4	5- 1	5	5- 6	5	7- 4	6	5- 0	4	6.67	....
Average	89.3	105	16.6	26	9.5	12	15.5	19	13.9	16	12.5	13	9.5	9	11.8	10	3.08	....
Standard grade—																		
1910	60- 1	80	17-11	30	10- 7	14	11- 5	14	7-11	9	5- 6	6	4- 0	4	3- 9	3	....	....
1911	58- 8	74	16-12	25	7-14	10	16-11	20	9-11	11	0-12	1	5-12	6	1- 0	1	....	....
1912	44- 0	51	7- 9	12	5- 4	7	5-13	7	6- 5	7	5-13	6	6- 2	6	7- 2	6	1.00	....
1913	24-10	35	6- 4	14	5- 6	7	2- 8	3	7- 3	8	1- 0	1	1- 2	1	1- 3	1	1.33	....
1914	46- 8	73	34-12	58	8- 6	11	2- 8	3	0-14	1	0- 0	0	0- 0	0	0- 0	0	5.33	....
1915	11- 7	11	0-12	1	0- 0	0	1-14	2	3- 0	3	3- 5	3	1- 4	1	1- 4	1	4.67	....
Average	40.9	54	14.0	23	6.2	8	6.8	8	5.8	6	2.7	3	3.0	3	2.3	2	3.08	....
Cull fruits—																		
1912	9- 5	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	4- 8	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	15-12	32	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.33	....
1915	2-15	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.00	....
Average	8.1	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.17	....
Total crop—																		
1910	190- 7	232	42- 0	68	23- 7	31	30-14	38	25-10	29	22- 8	24	21- 2	21	24-14	21	....	....
1911	201- 0	243	40- 4	59	29- 0	37	43-13	54	35-15	40	25- 6	27	17-12	18	8-14	8	....	....
1912	161- 5	184	14- 2	23	11- 4	15	28- 2	35	23- 0	26	22- 2	23	15-10	15	37-12	33	.78	0
1913	101-13	135	14- 0	28	13-10	18	18- 3	22	20- 3	23	12- 5	13	12- 2	12	6-14	6	1.33	1
1914	115- 1	181	70-14	114	15- 6	20	7- 8	9	5- 9	6	0- 0	0	0- 0	0	0- 0	0	4.89	1
1915	43-12	44	2- 3	3	1-11	2	5- 7	6	8- 1	8	8-11	8	8- 8	7	6- 4	5	5,89	2
Average	**135.6**	**170**	**30.6**	**49**	**15.7**	**21**	**22.3**	**27**	**19.7**	**22**	**15.2**	**16**	**12.5**	**12**	**14.1**	**12**	**3.22**	**1.00**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
40. Tree No. 23-59-12, Alternate-Bearing strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	101- 2	137	30- 6	49	17- 7	24	19- 9	25	16-12	20	9-12	11	5- 2	6	2- 2	2	......	......
1911	48-14	35	0- 5	1	0- 9	1	0- 0	0	0-12	1	1-15	2	5- 8	5	39-13	25	......	......
1912	163-12	234	74-13	123	23- 1	32	28- 5	36	23- 9	28	10-14	12	2- 0	2	1- 2	1	1.67	......
1913	103- 5	106	4- 3	6	6- 6	8	11-11	14	19- 5	21	17- 8	18	16- 9	16	27-11	23	.33	......
1914	59-11	77	17- 2	25	20-12	27	8- 7	10	9- 0	10	2- 8	3	1-14	2	0- 0	0	5.33	......
1915	33- 3	33	5- 4	7	1-11	2	4-12	5	7- 1	7	4- 5	4	1- 2	1	9- 0	7	4.00	......
Average	85.0	104	22.0	35	11.6	16	12.1	15	12.7	15	7.8	8	5.4	5	13.2	10	2.83	......
Standard grade—																		
1910	61- 1	92	20- 9	36	10-10	16	15- 5	21	10- 2	13	4- 7	6	0- 0	0	0- 0	0	......	......
1911	17- 8	15	0- 3	1	0- 0	0	0- 0	0	0- 0	0	1-10	2	3- 6	3	12- 5	9	......	......
1912	80-13	112	33-12	56	7-10	10	16-10	21	14-12	17	2-13	3	2-15	3	2- 5	2	4.17	......
1913	49-14	57	9- 9	14	6- 8	8	7- 7	9	6-10	7	9-11	10	2- 0	2	8- 1	7	1.33	......
1914	41-11	58	20- 8	33	6-13	9	3- 4	4	11- 2	12	0- 0	0	0- 0	0	0- 0	0	3.33	......
1915	17- 0	17	2- 1	3	0-13	1	0-13	1	2- 1	2	6- 9	6	2- 5	2	2- 6	2	5.33	......
Average	44.7	59	14.4	24	5.4	7	7.2	9	7.5	8	4.2	5	1.7	2	4.3	3	3.54	......
Cull fruits—																		
1912	5- 3	11	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	11- 7	30	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	15- 0	29	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1915	0-13	1	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1.00	......
Average	8.1	18	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1.00	......

Total crop—																		
1910	162- 3	229	50-15	85	28- 1	40	34-14	46	26-14	33	14- 3	17	5- 2	6	2- 2	2	....	....
1911	66- 6	50	0- 8	2	0- 9	1	0- 0	0	0-12	1	3- 9	4	8-14	8	52- 2	34	....	....
1912	249-12	357	108- 9	179	30-11	42	44-15	57	38- 5	45	13-11	15	4-15	5	3- 7	3	3.33	7
1913	164-10	193	13-12	20	12-14	16	19- 2	23	25-15	28	27- 3	28	18- 9	18	35-12	30	.83	0
1914	116- 6	164	37-10	58	27- 9	36	11-11	14	20- 2	22	2- 8	3	1-14	2	0- 0	0	4.22	0
1915	51- 0	51	7- 5	10	2- 8	3	5- 9	6	9- 2	9	10-14	10	3- 7	3	11- 6	9	4.14	0
Average	**135.1**	**174**	**36.4**	**59**	**17.0**	**23**	**19.3**	**24**	**20.2**	**23**	**12.0**	**13**	**7.1**	**7**	**17.5**	**13**	**3.13**	**1.75**
41. **Tree No. 23-61-12,** Marsh strain:																		
Ivory-White grade—																		
1910	119- 7	149	30-13	46	18- 2	24	23- 8	29	17-13	20	11- 2	12	9-11	10	8- 6	8	....	....
1911	122- 8	114	3-14	6	5-13	7	8-14	10	8-14	9	19- 3	19	20- 6	19	55- 8	44	....	....
1912	142- 1	160	14- 2	22	10- 9	14	22- 3	27	28-10	32	24- 2	26	14- 1	14	28- 6	25	2.67	....
1913	61- 8	66	4- 1	6	6-12	9	7-11	9	10-15	12	11- 2	11	12-10	12	8- 5	7	0	....
1914	49-10	70	28-14	45	9- 8	12	7-12	9	3- 8	4	0- 0	0	0- 0	0	0- 0	0	6.67	....
1915	42-10	41	2- 4	3	1-12	2	6- 6	7	7-13	8	7-10	7	9- 4	8	7- 9	6	4.33	....
Average	89.7	100	14.0	21	8.8	12	12.7	15	12.9	14	12.2	12	11.0	10	18.0	15	3.42	....
Standard grade—																		
1910	50-11	69	16- 0	25	8- 7	12	10- 1	13	9-13	12	5- 5	6	0- 0	0	1- 1	1	....	....
1911	64-12	65	5-13	9	7-10	9	6- 2	7	6- 8	7	1-14	2	14- 3	13	22-10	18	....	....
1912	52-11	62	10- 3	16	6- 1	8	9- 0	11	8- 5	9	6- 0	6	6- 6	6	6-12	6	3.33	....
1913	28-12	34	9- 4	13	3- 3	4	5- 4	6	3-12	4	3-15	4	2- 1	2	1- 5	1	5.33	....
1914	39-14	66	31-14	56	3- 1	4	4- 2	5	0-13	1	0- 0	0	0- 0	0	0- 0	0	6.67	....
1915	22-11	24	5- 0	7	0-13	1	1-14	2	3-12	4	5- 7	5	2- 4	2	3- 9	3	3.00	....
Average	43.2	53	13.0	21	4.8	6	6.1	7	5.5	6	3.8	4	4.1	4	5.9	5	4.58	....
Cull fruits—																		
1912	1- 3	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	3- 2	19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	7- 4	17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.67	....
1915	0- 9	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.00	....
Average	3.0	10	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....
Total crop—																		
1910	170- 2	218	46-13	71	26- 9	36	33- 9	42	27-10	32	16- 7	18	9-11	10	9- 7	9	....	....
1911	187- 4	179	9-11	15	13- 7	16	15- 0	17	15- 6	16	21- 1	21	34- 9	32	78- 2	62	....	....
1912	195-15	225	24- 5	38	16-10	22	31- 3	38	36-15	41	30- 2	32	20- 7	20	35- 2	31	3.11	1
1913	93- 6	119	13- 5	19	9-15	13	12-15	15	14-11	16	15- 1	15	14-11	14	9-10	8	2.67	1
1914	96-12	153	60-12	101	12- 9	16	11-14	14	4- 5	5	0- 0	0	0- 0	0	0- 0	0	5.33	0
1915	65-14	66	7- 4	10	2- 9	3	8- 4	9	11- 9	12	13- 1	12	11- 8	10	11- 2	9	4.00	1
Average	**134.9**	**160**	**27.0**	**42**	**13.6**	**18**	**18.8**	**23**	**18.4**	**20**	**16.0**	**16**	**15.1**	**14**	**23.9**	**20**	**3.78**	**0.75**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
42. Tree No. 23-62-18, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	61-10	71	6- 7	10	8- 9	11	7- 5	9	7-13	9	9- 6	10	11-12	12	10- 6	10	....	....
1911	177-12	147	5- 6	8	4-11	6	14- 5	16	15-11	17	19- 1	19	30- 1	28	88- 9	53	....	....
1912	101-14	97	3- 6	5	5- 7	7	5-12	7	7- 2	8	7-12	8	12- 5	12	60- 2	50	0.33	....
1913	88-14	103	11- 8	18	13- 5	17	9- 4	11	27-14	31	9-11	10	8- 0	8	9- 4	8	0	....
1914	44- 3	56	12- 8	19	10-12	14	10- 8	12	6- 7	7	4- 0	4	0- 0	0	0- 0	0	4.33	....
1915	75- 9	76	9-12	13	3- 6	4	11- 3	12	15- 1	15	15-15	15	10- 4	9	10- 0	8	6.00	....
Average	91.6	92	8.2	12	7.7	10	9.7	11	13.3	14	11.0	11	12.1	11	29.7	21	2.67	....
Standard grade—																		
1910	34- 7	43	6-12	11	6- 2	9	5-13	7	3-12	4	3-13	4	6- 1	6	2- 2	2	....	....
1911	33-14	39	8- 0	13	0-10	1	4- 4	5	2- 7	3	4- 1	4	6- 4	6	8- 4	7	....	....
1912	42-11	39	1- 2	2	0- 0	0	3- 4	4	2-11	3	0-15	1	3- 0	3	31-11	26	2.33	....
1913	33-10	47	14- 2	26	4- 0	5	4- 5	5	4-10	5	2- 0	2	2- 3	2	2- 6	2	1.33	....
1914	46- 9	60	17- 0	26	7- 4	9	6-12	8	11- 7	13	2- 0	2	2- 2	2	0- 0	0	2.67	....
1915	24- 2	24	2-14	4	1-11	2	2-12	3	5- 0	5	4-10	4	3- 4	3	3-15	3	4.00	....
Average	35.9	42	8.3	14	3.3	4	4.5	5	5.0	6	2.9	3	3.8	4	8.1	7	2.58	....
Cull fruits—																		
1912	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	13- 3	51	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	6- 8	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.67	....
1915	1-10	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.33	....
Average	5.3	18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.00	....

Total crop—																		
1910	96- 1	114	13- 3	21	14-11	20	13- 2	16	11- 9	13	13- 3	14	17-13	18	12- 8	12	......	......
1911	211-10	186	13- 6	21	5-5	7	18- 9	21	18- 2	20	23- 2	23	36- 5	34	96-13	60	......	......
1912	144- 9	136	4- 8	7	5- 7	7	9- 0	11	9-13	11	8-11	9	15- 5	15	91-13	76	1.67	0
1913	135-11	201	25-10	44	17- 5	22	13- 9	16	32- 8	36	11-11	12	10- 3	10	11-10	10	.67	0
1914	97- 4	134	29- 8	45	18- 0	23	17- 4	20	17-14	20	6- 0	6	2- 2	2	0- 0	0	4.89	3
1915	101- 5	103	12-10	17	5- 1	6	13-15	15	20- 1	20	20- 9	19	13- 8	12	13-15	11	5.44	4
Average	**131.1**	**146**	**16.5**	**26**	**11.0**	**14**	**14.2**	**17**	**18.3**	**20**	**13.9**	**14**	**15.9**	**15**	**37.8**	**28**	**3.17**	**1.75**
43. Tree No. 23-59-6, Marsh strain:																		
Ivory-White grade—																		
1910	136- 3	158	13- 4	20	14- 2	19	32- 0	39	25- 4	29	19-12	21	17- 8	17	14- 5	13	......	......
1911	112-10	104	8- 6	12	0- 0	0	10- 9	12	5-13	6	15- 2	15	21- 0	19	51-12	40	......	......
1912	98- 7	100	2-12	4	4- 8	6	8- 5	10	12- 8	14	16-12	18	16- 5	16	37- 5	32	1.67	......
1913	60- 8	69	5-14	10	7-13	10	9-14	12	12-14	14	8-13	9	11-10	11	3-10	3	.67	......
1914	48-13	69	27- 8	43	10- 3	13	7-10	9	2-10	3	0-14	1	0- 0	0	0- 0	0	6.67	......
1915	31-15	30	1-11	2	2-10	3	1-12	2	3- 1	3	6- 5	6	9- 2	8	7- 6	6	4.00	......
Average	81.4	88	9.9	15	6.5	8	11.7	14	10.4	11	11.3	12	12.6	12	19.1	16	3.25	......
Standard grade—																		
1910	11-17	18	4-15	8	3- 8	5	3- 2	4	0- 8	1	0- 0	0	0- 0	0	0- 0	0	......	......
1911	64- 2	64	5- 1	7	2- 6	3	8- 5	9	3-14	4	9- 2	9	13- 2	12	22- 4	20	......	......
1912	50- 5	52	5- 6	9	2-15	4	4- 2	5	3-11	4	4-14	5	3-14	4	25- 7	21	1.67	......
1913	37- 2	46	7-14	15	5-12	7	7- 0	8	5-10	6	5- 4	5	4- 6	4	1- 4	1	2.67	......
1914	52- 9	80	34-14	58	9-12	13	6- 1	7	1-14	2	0- 0	0	0- 0	0	0- 0	0	5.00	......
1915	24-15	25	2- 3	3	2- 8	3	3- 9	4	5- 1	5	2- 3	2	5-10	5	3-13	3	4.00	......
Average	40.2	48	10.1	17	4.5	6	5.4	6	3.4	4	3.5	3	4.5	4	8.8	7	3.34	......
Cull fruits—																		
1912	9- 8	12	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	6- 1	25	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	13- 5	31	......	......	......	......	......	......	......	......	......	......	......	......	......	......	5.33	......
1915	1-12	2	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.00	......
Average	7.7	18	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.67	......
Total crop—																		
1910	148- 4	176	18- 3	28	17-10	24	35- 2	43	25-12	30	19-12	21	17- 8	17	14- 5	13	......	......
1911	176-12	168	13- 7	19	2- 6	3	18-14	21	9-11	10	24- 4	24	34- 2	31	74- 0	60	......	......
1912	158- 4	152	8- 2	13	7- 7	10	12- 7	15	16- 3	18	21-10	23	20- 3	20	62-12	53	1.67	0
1913	103-11	140	13-12	25	13- 9	17	16-14	20	18- 8	20	14- 1	14	16- 0	15	4-14	4	1.67	0
1914	114-11	180	62- 6	101	19-15	26	13-11	16	4- 8	5	0-14	1	0- 0	0	0- 0	0	5.67	2
1915	58-10	57	3-14	5	5- 2	6	5- 5	6	8- 2	8	8- 8	8	14-12	13	11- 3	9	4.00	0
Average	**126.7**	**148**	**20.0**	**32**	**11.0**	**14**	**17.1**	**20**	**13.8**	**15**	**14.8**	**15**	**17.1**	**16**	**27.9**	**23**	**3.25**	**0.50**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
44. **Tree No. 23-63-23,** Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	67- 8	83	33-12	22	8- 6	11	7- 0	9	11- 3	13	12- 2	13	6- 9	7	8- 8	8	....	....
1911	101- 6	83	1- 6	2	1-12	2	2-13	3	6- 0	6	8- 5	8	17- 4	15	63-14	47	....	....
1912	110- 0	138	21- 2	35	11-12	16	24- 8	31	13-12	18	12- 0	13	8-14	9	18- 0	16	1.00	....
1913	83-11	92	5-13	9	10- 2	13	12-10	15	17-10	19	18-14	19	11-10	11	7- 0	6	.67	....
1914	51-14	73	28-10	45	6-10	9	7- 8	9	7- 2	8	1- 0	1	1- 0	1	0- 0	0	4.67	....
1915	39-10	39	2- 4	3	2- 9	3	6- 6	7	9-15	10	5- 2	5	4- 8	4	8-14	7	5.67	....
Average	75.7	85	12.1	19	6.9	9	10.1	12	10.9	12	9.6	10	8.3	8	17.7	14	3.00	....
Standard grade—																		
1910	28-14	41	7-11	14	4- 8	7	4- 8	6	7- 4	9	2-14	3	2- 1	2	0- 0	0	....	....
1911	36- 1	34	3- 1	5	3- 6	4	2-12	3	2-15	3	1- 0	1	5-14	5	17- 1	13	....	....
1912	68- 8	87	14-15	25	10- 8	14	12-13	16	8- 7	10	8- 5	9	6-13	7	6-11	6	1.67	....
1913	45-11	57	15-12	25	7- 0	9	2- 8	3	6- 9	7	6-14	7	2- 4	2	4-12	4	2.00	....
1914	56- 1	89	43- 0	73	5- 6	7	6-11	8	1- 0	1	0- 0	0	0- 0	0	0- 0	0	4.33	....
1915	21- 7	22	3-11	5	1-12	2	2-14	3	7- 3	7	1- 1	1	2- 5	2	2- 9	2	4.67	....
Average	42.8	55	14.7	25	5.4	7	5.4	7	5.6	6	3.3	3	3.2	3	5.2	4	3.17	....
Cull fruits—																		
1912	8-15	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	6- 5	23	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	24-13	57	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....
1915	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	10.0	24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.67	....

Total crop—																		
1910	96- 6	124	21- 7	36	12-14	18	11- 8	15	18- 7	22	15- 0	16	8-10	9	8- 8	8	......	......
1911	137- 7	117	4- 7	7	5- 2	6	5- 9	6	8-15	9	9- 5	9	23- 2	20	80-15	60	......	......
1912	187- 7	240	36- 1	60	22- 4	30	37- 5	47	22- 3	28	20- 5	22	15-11	16	24-11	22	1.44	1
1913	135-11	172	21- 9	34	17- 2	22	15- 2	18	24- 3	26	25-12	26	13-14	13	11-12	10	1.33	0
1914	132-12	219	71-10	118	12- 0	16	14- 3	17	8- 2	9	1- 0	1	1- 0	1	0- 0	0	4.22	1
1915	61- 1	61	5-15	8	4- 5	5	9- 4	10	17- 2	17	6- 3	6	6-13	6	11- 7	9	5.17	2
Average	**125.1**	**156**	**26.8**	**44**	**12.3**	**16**	**15.5**	**19**	**16.5**	**19**	**12.9**	**13**	**11.5**	**11**	**22.9**	**18**	**3.04**	**1.00**
45. **Tree No. 23-62-19,** Marsh strain:																		
Ivory-White grade—																		
1910	65- 0	62	3- 0	4	0-14	1	0-13	1	3-10	4	12- 1	13	13- 3	13	31- 7	26	......	......
1911	112-13	115	8-11	12	11- 9	14	6-11	8	22- 6	24	24- 5	24	8- 8	8	30-11	25	......	......
1912	135-15	159	24- 2	38	12- 3	16	19-12	24	22- 6	25	15-11	17	18- 4	18	23- 9	21	1.67	......
1913	74-10	93	20- 0	30	22-11	29	8- 4	10	12- 2	13	6- 0	6	4- 6	4	1- 3	1	0	......
1914	63- 0	88	39-15	61	10- 8	13	7-12	9	3-12	4	0- 0	0	1- 1	1	0- 0	0	6.33	......
1915	46-11	46	6-12	9	2-10	3	3-13	4	9- 0	9	8-11	8	4- 9	4	11- 4	9	5.33	......
Average	83.0	94	17.1	26	10.1	13	7.8	9	12.2	13	11.1	11	8.3	8	16.4	14	3.33	......
Standard grade—																		
1910	21- 0	22	0-11	1	0-12	1	0- 0	0	1-13	2	2-14	3	7- 5	8	7- 9	7	......	......
1911	44- 4	57	16- 9	27	4-12	6	5-14	7	5- 2	6	4- 0	4	2-15	3	5- 0	4	......	......
1912	48-15	58	6- 1	10	6-10	9	7- 0	9	9-13	11	5- 9	6	6-15	7	6-15	6	2.67	......
1913	34- 5	47	18-14	29	7- 5	9	5- 4	6	1-13	2	1- 1	1	0- 0	0	0- 0	0	2.00	......
1914	34- 4	50	21- 0	34	8-12	11	1-11	2	2-13	3	0- 0	0	0- 0	0	0- 0	0	4.67	......
1915	21- 8	22	4-14	7	0- 0	0	1-13	2	3- 0	3	4- 5	4	1- 2	1	6- 6	5	5.00	......
Average	34.0	43	11.3	18	4.7	6	3.6	4	4.1	5	3.0	3	3.1	3	4.3	3	3.59	......
Cull fruits—																		
1912	4- 8	6	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	10- 5	36	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	12- 0	22	......	......	......	......	......	......	......	......	......	......	......	......	......	......	3.00	......
1915	2- 7	3	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1.00	......
Average	7.3	17	......	......	......	......	......	......	......	......	......	......	......	......	......	......	2.00	......
Total crop—																		
1910	86- 0	84	3-11	5	1-10	2	0-13	1	5- 7	6	14-15	16	20- 8	21	39- 0	33	......	......
1911	157- 1	172	25- 4	39	16- 5	20	12- 9	15	27- 8	30	28- 5	28	11- 7	11	35-11	29	......	......
1912	189- 6	223	30- 3	48	18-13	25	26-12	33	32- 3	36	21- 4	23	25- 3	25	30- 8	27	2.33	2
1913	119- 4	176	38-14	59	30- 0	38	13- 8	16	13-15	15	7- 1	7	4- 6	4	1- 3	1	.80	1
1914	109- 4	160	60-15	95	19- 4	24	9- 7	11	6- 9	7	0- 0	0	1- 1	1	0- 0	0	4.67	3
1915	70-10	71	11-10	16	2-10	3	5-10	6	12- 0	12	13- 0	12	5-11	5	17-10	14	4.00	2
Average	**121.9**	**148**	**28.4**	**44**	**14.8**	**19**	**11.4**	**14**	**16.3**	**18**	**14.1**	**14**	**11.4**	**11**	**20.7**	**17**	**2.95**	**2.00**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
46. Tree No. 23-63-22, Alternate-Bearing strain: Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	69- 6	90	18- 3	28	8-12	12	17- 9	22	12-14	15	8-14	10	2- 1	2	1- 1	1		
1911	35- 8	23	0- 0	0	0- 0	0	0- 0	0	1-11	2	2- 3	2	3- 3	3	28- 7	16		
1912	113- 3	155	47- 6	75	20- 0	27	21- 1	26	10- 4	12	7- 6	8	4- 0	4	3- 2	3	3.00	
1913	86- 3	94	7-13	12	6-15	9	9- 6	11	28- 9	31	9- 1	9	12- 9	12	11-14	10	0	
1914	77- 1	101	37- 4	54	14- 6	18	12- 1	14	13- 6	15	0- 0	0	0- 0	0	0- 0	0	5.33	
1915	40- 1	40	4-15	7	1-11	2	7- 8	8	8- 3	8	7-12	7	4-12	4	5- 4	4	5.33	
Average	70.2	84	19.3	29	8.6	11	11.3	14	12.5	14	5.8	6	4.4	4	8.3	6	3.42	
Standard grade—																		
1910	47- 3	66	9-13	17	5- 2	8	18- 1	24	10- 5	13	3-14	4	0- 0	0	0- 0	0		
1911	6- 2	5	0- 0	0	0- 0	0	0- 0	0	0- 0	0	0- 0	0	2- 4	2	3-14	3		
1912	92- 7	127	38- 6	64	15-10	21	13- 6	16	10- 9	12	6-10	7	5-12	5	2- 2	2	2.83	
1913	57- 3	69	16-13	26	7- 2	9	6-14	8	12- 3	13	5- 2	5	3- 3	3	5-14	5	2.00	
1914	48- 3	66	25- 7	39	6- 6	8	11-14	14	4- 8	5	0- 0	0	0- 0	0	0- 0	0	6.33	
1915	17- 5	17	1- 7	2	0-14	1	2-9	3	5- 1	5	2- 3	2	2- 6	2	2-13	2	6.67	
Average	44.7	58	15.3	25	5.8	8	8.8	10	7.1	8	3.0	3	2.3	2	2.4	2	4.46	
Cull fruits—																		
1912	2- 4	5																
1913	11-11	32																
1914	12- 6	32															6.00	
1915	1- 0	2															1.50	
Average	6.8	18															3.75	

Total crop—																		
1910	116- 9	156	28- 0	45	13-14	20	35-10	46	23- 3	28	12-12	14	2- 1	2	1- 1	1	....	....
1911	41-10	28	0- 0	0	0- 0	0	0- 0	0	1-11	2	2- 3	2	5- 7	5	32- 5	19	....	....
1912	207-14	287	85-12	139	35-10	48	34- 7	42	20-13	24	14- 0	15	9-12	9	5- 4	5	2.89	0
1913	155- 1	195	24-10	38	14- 1	18	16- 4	19	40-12	44	14- 3	14	15-12	15	17-12	15	1.00	0
1914	137-10	199	62-11	93	20-12	26	23-15	28	17-14	20	0- 0	0	0- 0	0	0- 0	0	5.89	0
1915	58- 6	59	6- 6	9	2- 9	3	10- 1	11	13- 4	13	9-15	9	7- 2	6	8- 1	6	4.88	0
Average	**119.5**	**154**	**34.6**	**54**	**14.5**	**19**	**20.1**	**24**	**19.6**	**22**	**8.8**	**9**	**6.7**	**6**	**10.7**	**8**	**3.67**	**0**
47. Tree No. 23-63-16, Marsh strain:																		
Ivory-White grade—																		
1910	88- 9	101	11- 5	17	4-15	7	15-11	19	16- 0	18	10- 1	11	12-15	13	17-10	16	....	....
1911	122-13	133	15- 8	23	9-10	12	16- 6	19	20- 4	22	19-10	20	23-13	22	17-10	15	....	....
1912	92-13	112	17-12	29	9-11	13	12- 4	15	18- 7	21	15- 7	16	11- 6	11	7-14	7	1.33	....
1913	71- 8	89	17- 4	26	16- 4	21	13- 8	16	12-11	14	6-12	7	5- 1	5	0- 0	0	2.33	....
1914	52- 9	83	45- 5	74	5- 9	7	0-12	1	0-15	1	0- 0	0	0- 0	0	0- 0	0	2.00	....
1915	40- 5	43	8-10	11	5-14	7	5-12	6	7-14	8	7- 7	7	3- 8	3	1- 4	1	5.00	....
Average	78.1	94	19.3	30	8.7	11	10.7	13	12.7	14	9.9	10	9.4	9	7.4	6	3.92	....
Standard grade—																		
1910	51-11	66	8- 2	15	2- 9	4	9- 3	12	8- 3	10	6- 1	7	9- 6	10	8- 3	8	....	....
1911	42- 2	48	6-15	11	5- 8	7	4- 4	5	5- 8	6	5- 9	6	8- 7	8	5-15	5	....	....
1912	52-14	65	9- 2	16	6- 6	8	14- 2	17	7- 1	8	4-14	5	8- 0	8	3- 5	3	.17	....
1913	22-11	33	12- 4	21	4-14	6	1-12	2	1-12	2	0-15	1	1- 2	1	0- 0	0	2.33	....
1914	26- 6	41	21- 9	35	3-15	5	0- 0	0	0-14	1	0- 0	0	0- 0	0	0- 0	0	6.00	....
1915	11- 5	13	5- 5	7	0-14	1	0-15	1	2-15	3	0- 0	0	0- 0	0	1- 4	1	3.67	....
Average	34.5	44	10.5	18	4.0	5	5.1	6	4.4	5	2.9	3	4.5	5	3.1	3	3.04	....
Cull fruits—																		
1912	9- 7	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	7- 4	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	14- 5	35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....
1915	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	7.8	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.33	....
Total crop—																		
1910	140- 4	167	19- 7	32	7- 8	11	24-14	31	24- 3	28	16- 2	18	22- 5	23	25-13	24	....	....
1911	164-15	181	22- 7	34	15- 2	19	20-10	24	25-12	28	25- 3	26	32- 4	30	23- 9	20	....	....
1912	155- 2	190	26-14	45	16- 1	21	26- 6	32	25- 8	29	20- 5	21	19- 6	19	11- 3	10	.55	2
1913	101- 7	138	29- 8	47	21- 2	27	15- 4	18	14- 7	16	7-11	8	6- 3	6	0- 0	0	2.33	0
1914	93- 4	159	66-14	109	9- 8	12	0-12	1	1-13	2	0- 0	0	0- 0	0	0- 0	0	5.78	2
1915	51-10	56	13-15	18	6-12	8	6-11	7	10-13	11	7- 7	7	3- 8	3	2- 8	2	4.33	1
Average	**117.8**	**149**	**29.8**	**48**	**12.7**	**16**	**15.8**	**19**	**17.1**	**19**	**12.8**	**13**	**13.9**	**14**	**10.5**	**9**	**3.25**	**1.25**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
48. Tree No. 23-65-19, Marsh strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	112- 7	134	18-11	29	9- 7	13	14- 2	18	30-14	35	13- 1	14	12-12	13	12-14	12	....	....
1911	88-10	96	13-10	18	10-15	13	13-12	16	17-12	19	14- 4	14	6- 8	6	11-13	10	....	....
1912	110- 3	122	11-10	18	9- 4	12	12- 8	15	20-12	23	19- 9	21	14-11	14	21-13	19	0.67	....
1913	61- 0	68	8- 9	13	8-14	11	7-10	9	12-14	14	7-14	8	8- 0	7	7- 3	6	.33	....
1914	50- 1	76	39- 4	63	6- 7	8	2- 9	3	1-13	2	0- 0	0	0- 0	0	0- 0	0	5.33	....
1915	30- 0	31	3-14	5	0-15	1	8- 2	9	7-14	8	3- 3	3	4-12	4	1- 4	1	5.33	....
Average	75.4	88	15.9	24	7.7	10	9.8	12	15.3	17	9.7	10	7.8	7	9.2	8	2.92	....
Standard grade—																		
1910	48- 1	67	9-10	18	5-12	9	9- 0	12	6-14	9	5-15	7	7- 4	8	3-10	4	....	....
1911	53- 1	58	6-14	10	4- 2	5	7-14	9	17- 0	18	6-10	7	2- 1	2	8- 8	7	....	....
1912	60-10	66	6- 4	9	5- 6	7	8- 3	10	10- 1	11	12-11	13	5- 4	5	12-13	11	.17	....
1913	22- 6	30	6-13	14	2- 7	3	4- 2	5	2-13	3	2- 3	2	1- 4	1	2-12	2	3.00	....
1914	27- 4	43	20-14	35	3-14	5	2- 8	3	0- 0	0	0- 0	0	0- 0	0	0- 0	0	4.67	....
1915	18-11	22	7-10	11	1-12	2	2- 0	2	4- 2	4	2- 2	2	1- 1	1	0- 0	0	5.50	....
Average	38.3	48	9.7	16	3.9	5	5.6	7	6.8	7	4.9	5	2.8	3	4.6	4	3.34	....
Cull fruits—																		
1912	6- 1	8	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	3-11	11	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	14-10	33	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.33	....
1915	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	6.1	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.33	....

Total crop—																		
1910	160- 8	201	28- 5	47	15-13	22	23- 2	30	37-12	44	19- 0	21	20- 0	21	16- 8	16	....	....
1911	141-11	154	20- 8	28	15- 1	18	21-10	25	34-12	37	20-14	21	8- 9	8	20- 5	17	....	....
1912	176-14	196	17-14	27	14-10	19	20-11	25	30-13	34	32- 4	34	19-15	19	34-10	30	.33	0
1913	87- 1	109	15- 6	27	11- 5	14	11-12	14	15-11	17	10- 1	10	9- 4	8	9-15	8	1.67	1
1914	91-15	152	60- 2	98	10- 5	13	5- 1	6	1-13	2	0- 0	0	0- 0	0	0- 0	0	5.11	2
1915	48-11	53	11- 8	16	2-11	3	10- 2	12	12- 0	12	5- 5	5	5-13	5	1- 4	1	5.40	2
Average	**117.8**	**144**	**25.6**	**41**	**11.6**	**15**	**15.4**	**19**	**22.1**	**24**	**14.6**	**15**	**10.6**	**10**	**13.8**	**12**	**3.13**	**1.25**
49. Tree No. 23-63-19, Marsh strain:																		
Ivory-White grade—																		
1910	98- 3	121	29- 4	43	11- 9	15	12- 4	15	13-12	16	16- 4	17	8-13	9	6- 5	6	....	....
1911	165-10	172	6- 0	8	7- 9	9	21- 4	23	22- 2	22	28-12	27	12-12	29	67- 3	54	....	....
1912	98- 1	108	20-11	31	6- 5	8	14- 0	16	9- 6	10	12- 1	12	15- 4	14	20- 6	17	1.67	....
1913	31-11	39	8-10	14	5-13	7	5- 1	6	3- 9	4	4- 2	4	3- 4	3	1- 4	1	.67	....
1914	31- 7	43	19- 6	29	5-10	7	2-10	3	1-14	2	1-15	2	0- 0	0	0- 0	0	6.67	....
1915	68- 6	65	2- 8	3	4- 5	5	5- 8	6	16-13	17	16- 1	15	10- 7	9	12-12	10	5.33	....
Average	82.2	91	14.4	21	6.9	8	10.1	11	11.3	12	13.2	13	8.4	11	18.0	15	3.59	....
Standard grade—																		
1910	36-14	54	16- 2	28	4- 1	5	4- 4	6	5- 7	7	4-14	6	2- 2	2	0- 0	0	....	....
1911	21- 0	30	8- 1	16	0- 0	0	4- 6	5	3-11	4	0-12	1	0-13	1	3- 5	3	....	....
1912	20-11	22	0- 0	0	3- 1	4	4- 6	5	2-11	3	2-13	3	4- 6	4	3- 6	3	3.75	....
1913	13- 1	21	7- 6	15	0-13	1	1-12	2	1- 0	1	1- 1	1	1- 1	1	0- 0	0	3.50	....
1914	29- 4	43	22- 9	35	3- 2	4	2-10	3	0-15	1	0- 0	0	0- 0	0	0- 0	0	4.33	....
1915	33- 7	32	2- 7	3	2- 9	3	1-15	2	5- 0	5	10-14	10	3- 7	3	7- 3	6	5.33	....
Average	25.7	34	9.4	16	2.2	3	3.2	4	3.1	3	3.4	3	2.0	2	2.3	2	4.23	....
Cull fruits—																		
1912	5- 6	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	4- 6	21	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	18- 4	37	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.67	....
1915	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Average	7.0	16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.67	....
Total crop—																		
1910	135- 1	175	45- 6	71	15-10	20	16- 8	21	19- 3	23	21- 2	23	10-15	11	6- 5	6	....	....
1911	186-10	202	14- 1	24	7- 9	9	25-10	28	25-13	26	29- 8	28	13- 9	30	70- 8	57	....	....
1912	124- 2	137	20-11	31	9- 6	12	18- 6	21	12- 1	13	14-14	15	19-10	18	23-12	20	2.89	0
1913	49- 2	81	16- 0	29	6-10	8	6-13	8	4- 9	5	5- 3	5	4- 5	4	1- 4	1	1.80	0
1914	78-15	123	41-15	64	8-12	11	5- 4	6	2-13	3	1-15	2	0- 0	0	0- 0	0	5.89	1
1915	101-13	97	4-15	6	6-14	8	7- 7	8	21-13	22	26-15	25	13-14	12	19-15	16	5.33	0
Average	**112.6**	**136**	**23.8**	**38**	**9.1**	**11**	**13.3**	**15**	**14.4**	**15**	**16.6**	**16**	**10.4**	**13**	**20.3**	**17**	**3.98**	**0.25**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive.*

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
50. Tree No. 23-63-25, Unproductive strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	68- 5	82	15- 2	23	4- 7	6	8-14	11	20- 0	22	11- 5	12	6- 6	6	2- 3	2	....	....
1911	110-11	98	2- 3	3	2-10	3	10- 4	11	10-13	11	11- 7	11	24- 0	21	49- 6	38	....	....
1912	59-15	58	4-11	7	1- 6	2	4- 3	5	2-12	3	4- 1	4	10- 8	10	32- 6	27	1.33	....
1913	73-15	88	11- 3	18	17- 4	22	15- 5	18	14-12	16	6- 2	6	3- 5	3	6- 0	5	0	....
1914	69-13	97	45-14	69	9- 0	11	8- 8	10	6- 7	7	0- 0	0	0- 0	0	0- 0	0	5.33	....
1915	34-11	35	4-15	7	4- 6	5	3-11	4	3- 0	3	6- 7	6	2- 3	2	10- 1	8	3.67	....
Average	69.6	76	14.0	21	6.5	8	8.5	10	9.6	11	6.6	7	7.7	7	16.7	13	2.58	....
Standard grade—																		
1910	26- 5	37	5- 7	11	1-10	2	3- 6	5	8- 1	10	4-14	6	0-14	1	2- 1	2	....	....
1911	39- 0	40	4- 6	7	3- 7	4	9- 3	10	4-14	5	3- 4	3	3- 7	3	10- 7	8	....	....
1912	35-10	37	5- 4	8	0- 0	0	4- 8	5	4-10	5	5-14	6	5- 5	5	10- 1	8	2.17	....
1913	22- 6	27	7-11	11	4- 4	5	3- 9	4	5-14	6	1- 0	1	0- 0	0	0- 0	0	3.50	....
1914	25-11	36	15-10	24	4-12	6	2- 7	3	2-14	3	0- 0	0	0- 0	0	0- 0	0	4.00	....
1915	17-15	18	4- 0	5	2-10	3	0-14	1	3- 1	3	3- 6	3	0- 0	0	4- 0	3	4.33	....
Average	27.8	33	7.1	11	2.8	4	4.0	4	4.9	5	3.0	3	1.6	2	4.4	3	3.50	....
Cull fruits—																		
1912	1-11	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	6- 2	23	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	13- 9	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
1915	1-12	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3.33	....
Average	5.7	14	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.17	....

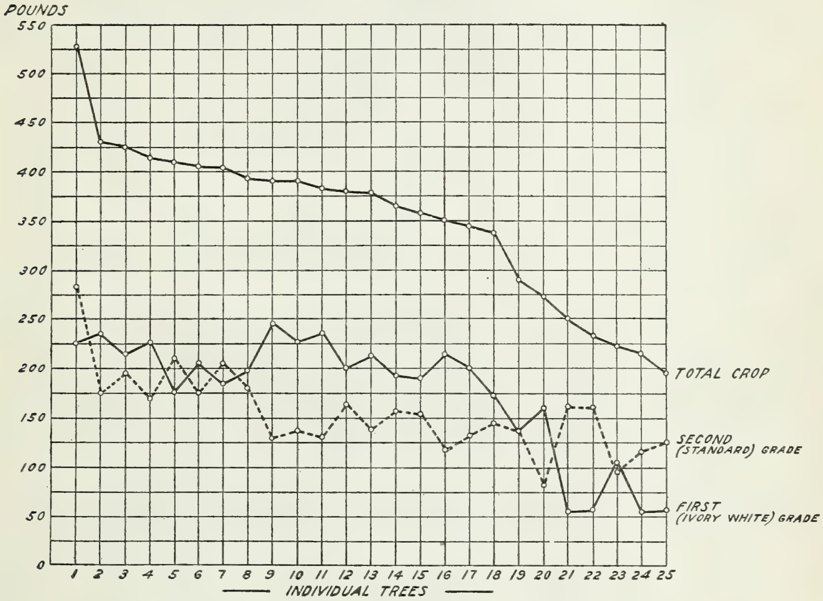
Total crop—																		
1910	94-10	119	20- 9	34	6- 1	8	12- 4	16	28- 1	32	16- 3	18	7- 4	7	4- 4	4	....	....
1911	149-11	138	6- 9	10	6- 1	7	19- 7	21	15-11	16	14-11	14	27- 7	24	59-13	46	....	....
1912	97- 4	97	9-15	15	1- 6	2	8-11	10	7- 6	8	9-15	10	15-13	15	42- 7	35	1.89	0
1913	102- 7	138	18-14	29	21- 8	27	18-14	22	20-10	22	7- 2	7	3- 5	3	6- 5	0	1.40	0
1914	109- 1	161	61- 8	93	13-12	17	10-15	13	9- 5	10	0- 0	0	0- 0	0	0- 0	0	4.77	0
1915	54- 6	56	8-15	12	7- 0	8	4- 9	5	6- 1	6	9-13	9	2- 3	2	14- 1	11	3.78	1
Average	**101.2**	**118**	**21.1**	**32**	**9.3**	**12**	**12.5**	**14**	**14.5**	**16**	**9.6**	**10**	**9.3**	**9**	**21.1**	**16**	**2.96**	**0.25**
51. Tree No. 23-60-14, Unproductive strain:																		
Ivory-White grade—																		
1910	18- 3	16	0- 9	1	0-12	1	0-14	1	0- 0	0	0- 0	0	2- 4	2	13-12	11	....	....
1911	102- 7	116	13- 5	20	12-12	16	19-11	23	24-11	27	7-15	8	9- 2	9	14-15	13	....	....
1912	58- 2	50	0-10	1	1- 8	2	2- 8	3	1- 0	1	3-14	4	8- 4	8	40- 6	31	1.67	....
1913	74- 8	88	11- 4	17	12- 6	16	12-13	16	11- 6	13	12- 8	13	8- 8	8	5-11	5	.67	....
1914	47- 6	64	22- 4	34	8- 8	11	6-10	8	8- 2	9	1-14	2	0- 0	0	0- 0	0	5.33	....
1915	40-11	41	5- 4	7	4- 8	5	4-10	5	7- 3	7	8-12	8	9- 2	8	1- 4	1	5.67	....
Average	56.9	63	8.9	13	6.7	9	7.8	9	8.7	10	5.8	6	6.2	6	12.7	10	3.34	....
Standard grade—																		
1910	15- 3	17	2-11	4	1- 9	2	0- 0	0	3-10	4	3-13	4	2- 2	2	1- 6	1	....	....
1911	40-14	50	9-15	15	12-16	16	2-20	4	4- 8	5	2-15	3	4-14	5	2- 6	2	....	....
1912	35- 1	33	0- 0	0	0- 0	0	3- 6	4	1-12	2	5-11	6	2-14	3	21- 6	18	0	....
1913	27- 3	37	7-13	16	3-13	5	2- 8	3	2-10	3	4- 0	4	3- 0	3	3- 7	3	1.33	....
1914	31- 2	46	17- 6	30	3-10	5	1-10	2	5- 8	6	3- 0	3	0- 0	0	0- 0	0	2.67	....
1915	23-10	24	2- 8	4	1-13	2	5-12	6	5- 4	5	4- 7	4	2- 7	2	1- 7	1	6.33	....
Average	28.8	35	6.7	12	4.0	5	2.8	4	3.9	4	4.0	4	2.6	2	5.0	4	2.58	....
Cull fruits—																		
1912	0- 0	0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1913	7-13	35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1914	5- 3	12	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	....
1915	3-11	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.00	....
Average	4.2	13	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.50	....
Total crop—																		
1910	33- 6	33	3- 4	5	2- 5	3	0-14	1	3-10	4	3-13	4	4- 6	4	15- 2	12	....	....
1911	143- 5	166	23- 4	35	25-12	32	22-15	27	29- 3	32	10-14	11	14- 0	14	17- 5	15	....	....
1912	93- 3	83	0-10	1	1- 8	2	5-14	7	2-12	3	9- 9	10	11- 2	11	61-12	49	.71	0
1913	109- 8	160	19- 1	33	16- 3	21	15- 5	19	14- 0	16	16- 3	17	11- 8	11	9- 2	8	1.00	1
1914	83-11	122	39-10	64	12- 2	16	8- 4	10	13-10	15	4-14	5	0- 0	0	0- 0	0	4.33	1
1915	68- 0	70	7-12	11	6- 5	7	10- 6	11	12- 7	12	13- 3	12	11- 9	10	2-11	2	5.33	0
Average	**88.5**	**106**	**15.6**	**25**	**10.7**	**14**	**10.6**	**13**	**12.6**	**14**	**9.8**	**10**	**8.8**	**8**	**17.7**	**14**	**2.84**	**0.50**

TABLE III.—*Detailed statement of the annual performance of Marsh grapefruit trees in investigational plats A and B, for which records were obtained for the 6-year period, 1910 to 1915, inclusive*—Continued.

INVESTIGATIONAL PERFORMANCE RECORD, PLAT B, PLANTED IN THE AUTUMN OF 1903—Continued.

Rank, tree No., strain, grade, and year.	Sizes.																Number of—	
	Total.		112 and smaller.		96		80		64		48		32		24 and larger.		Seeds per fruit.	Variable fruits.
	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.		
52. Tree No. 23-60-15, Unproductive strain:																		
Ivory-White grade—	*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*		*Lbs. oz.*			
1910	7– 2	6	0– 0	0	0–12	1	0– 0	0	0– 0	0	0– 0	0	0– 0	0	6– 6	5	......	......
1911	123– 1	131	17– 4	23	18– 9	22	11– 5	13	21– 9	23	15– 3	15	17– 0	16	22– 3	19	......	......
1912	44– 5	41	0– 0	0	3– 3	4	1–12	2	6–14	7	2–14	3	4– 4	4	25– 6	21	1.33	......
1913	59–13	74	15– 8	24	11–10	15	8– 9	10	11–11	13	8– 1	8	2– 1	2	2– 5	2	2.00	......
1914	36– 9	48	17– 3	26	9– 5	12	2–10	3	3–12	4	3– 1	3	0– 0	0	0– 0	0	8.67	......
1915	43– 2	43	6– 2	8	3– 8	4	10– 2	10	7– 2	7	7–11	7	4–11	4	3–14	3	5.00	......
Average	52.3	57	9.3	13	7.9	10	5.8	6	8.5	9	6.2	6	4.7	4	10.0	8	4.25	......
Standard grade—																		
1910	6–14	8	2– 0	3	0– 0	0	0–14	1	0–14	1	0– 0	0	2– 2	2	1– 0	1	......	......
1911	22– 4	29	8–12	13	6– 2	8	1–10	2	0–12	1	1–14	2	2– 0	2	1– 2	1	......	......
1912	37– 8	34	0– 0	0	1– 8	2	2– 7	3	3–11	4	2– 1	2	7–12	7	20– 1	16	2.00	......
1913	29–11	41	12– 4	22	2– 5	3	4– 4	5	4–10	5	4– 1	4	2– 3	2	0– 0	0	2.50	......
1914	20–14	28	9–10	15	3–14	5	3–10	4	1–13	2	1–15	2	0– 0	0	0– 0	0	4.00	......
1915	24–13	25	3–12	5	1–11	2	3– 0	3	6– 1	6	3– 5	3	3– 7	3	3– 9	3	5.67	......
Average	23.7	28	6.1	10	2.6	3	2.6	3	3.0	3	2.2	2	2.9	3	4.3	4	3.54	......
Cull fruits—																		
1912	3–15	5	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1913	6– 6	33	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
1914	6– 2	10	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.33	......
1915	3– 9	5	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.00	......
Average	5.0	13	......	......	......	......	......	......	......	......	......	......	......	......	......	......	4.17	......
Total crop—																		
1910	14– 0	14	2– 0	3	0–12	1	0–14	1	0–14	1	0– 0	0	2– 2	2	7– 6	6	......	......
1911	145– 5	160	26– 0	36	24–11	30	12–15	15	22– 5	24	17– 1	17	19– 0	18	23– 5	20	......	......
1912	85–12	80	0– 0	0	4–11	6	4– 3	5	10– 9	11	4–15	5	12– 0	11	45– 7	37	1.78	0
1913	95–14	148	27–12	46	13–15	18	12–13	15	16– 5	18	12– 2	12	4– 4	4	2– 5	2	2.20	0
1914	63– 9	86	26–13	41	13–13	17	6– 4	7	5– 9	6	5– 0	5	0– 0	0	0– 0	0	5.67	0
1915	71– 8	73	9–14	13	5– 3	6	13– 2	13	13– 3	13	11– 0	10	8– 2	7	7– 7	6	5.00	2
Average	79.3	94	15.4	23	10.5	13	8.4	9	11.5	12	8.4	8	7.6	7	14.3	12	3.66	0.50

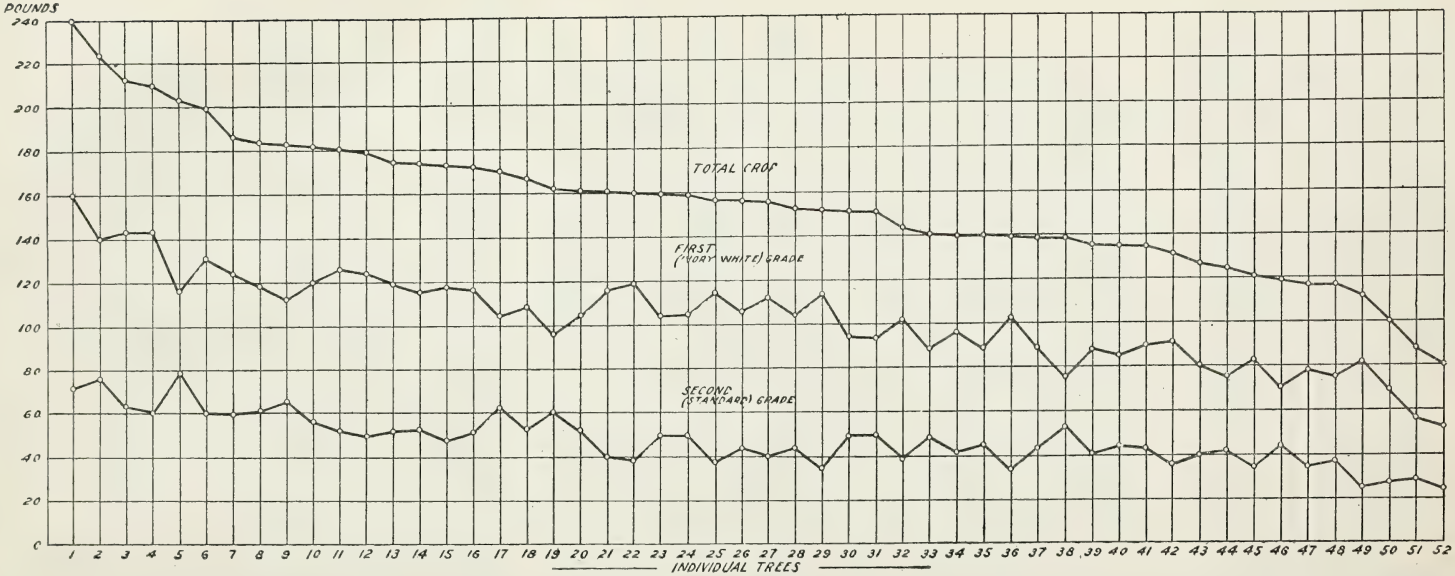
Because, as already stated, it is almost impossible, on the basis of performance records alone, to make an intelligent estimate of the relative value of different trees in any group, except of those which vary greatly in the amount of their production, no discussion of that nature will be attempted here. The records of the individual trees are presented to show the variations that occur between them. Conclusions of relative values are limited to comparisons of the various strains and the groups of highest and lowest producing trees in the two plats.



P20921HP

Fig. 1.—Average annual total crop and the production by the two commercial grades from the individual trees in the investigational performance-record plat A of Marsh grapefruit in a grove planted in 1898, being a summary of data secured during the 6-year period, 1910 to 1915, inclusive.

In order to show more clearly the relative variations in production that occur in the crops from the individual trees, figures 1 and 2 are presented, showing graphically the average total annual production of each tree and the production of the two commercial grades. The trees are ranked in these diagrams in the same order as in Table III. While the average production of the 25 trees in plat A, shown in figure 1, varies from 528.1 to 195.8 pounds, 17 of them, or 68 per cent, are seen to be within the comparatively uniform range of 430.9 to 337 pounds. The five lowest producing trees in this plat are all of the Seedy strain. The trees in plat B, recorded in figure 2, are younger than those in plat A, hence their average production is much lower. Their range of variation is from 240.1 to 79.3 pounds.



P20926HP

FIG. 2.—Average total annual crop and the production by the two commercial grades of the individual trees of Marsh grapefruit in the investigational performance-record plat B in a grove planted in the fall of 1903, being a summary of data secured during the 6-year period, 1910 to 1915, inclusive.

However, 42 of them, or 80.8 per cent, are within the comparatively uniform limits between 186.8 and 117.8 pounds. The three lowest producing trees in this plat are of the Unproductive strain.

Table IV shows the proportions of first-grade fruit in the crops of each tree in the investigational plats during the 6-year period, 1910 to 1915, inclusive, and the percentages of variable fruits which were recorded from each tree during the four years, 1912 to 1915, inclusive.

TABLE IV.—*Average annual production of the individual Marsh grapefruit trees in investigational plats A and B, for which detailed performance records were obtained for the 6-year period, 1910 to 1915, inclusive.*

[The strain to which each tree belongs is shown by abbreviations as follows: AB=Alternate Bearing, M=Marsh, R=Rough, RS=Rough Seedy, SS=Smooth Seedy, U=Unproductive.]

INVESTIGATIONAL PLAT A, PLANTED IN 1898.

Rank.	Strain.	Tree No.	Average annual production.				Rank.	Strain.	Tree No.	Average annual production.			
			Weight.	Number.	First grade (by weight).	Variable fruits [1] (by number).				Weight.	Number.	First grade (by weight).	Variable fruits [1] (by number).
			Lbs.		*Per cent.*	*Per cent.*				*Lbs.*		*Per cent.*	*Per cent.*
1	M	1-14-30	528.1	668	42.6	0.75	14	M	1-16-29	363.9	444	53.0	0.39
2	M	1-16-31	430.9	539	55.0	.70	15	M	1-17-29	357.0	425	52.6	.41
3	M	1-15-30	426.4	559	50.6	.45	16	M	1-17-31	351.5	400	61.2	1.00
4	M	1-16-30	414.3	518	54.8	.19	17	M	1-17-32	342.8	430	58.6	.41
5	M	1-15-31	409.2	540	42.9	.19	18	M	1-16-33	337.0	408	51.1	.31
6	M	1-17-30	404.6	482	50.6	.21	19	M	1-15-32	289.5	415	47.3	.60
7	R	1-14-32	404.5	531	45.5	.33	20	M	1-18-33	272.4	373	59.5	.40
8	M	1-14-33	393.5	507	49.9	.20	21	RS	1-14-29	249.2	288	22.5	.61
9	M	1-18-30	391.9	444	62.8	.39	22	RS	1-14-31	232.8	274	24.2	1.00
10	M	1-17-33	391.9	508	57.6	.20	23	SS	1-18-31	222.4	248	49.3	.20
11	M	1-18-29	382.1	411	61.8	.55	24	RS	1-15-33	214.9	267	26.2	.75
12	M	1-16-32	378.8	490	53.2	.26	25	RS	1-15-29	195.8	230	28.9	.87
13	M	1-18-32	377.1	447	56.4	.17							

INVESTIGATIONAL PLAT B, PLANTED IN THE AUTUMN OF 1903.

Rank.	Strain.	Tree No.	Weight.	Number.	First grade (by weight).	Variable fruits [1] (by number).	Rank.	Strain.	Tree No.	Weight.	Number.	First grade (by weight).	Variable fruits [1] (by number).
1	M	23-59-13	240.1	299	65.9	0.33	27	M	23-59-10	156.5	182	71.3	0.41
2	M	23-59- 5	223.7	263	62.6	1.24	28	AB	23-62-13	153.3	191	68.0	.26
3	M	23-59-11	213.3	258	67.1	.39	29	M	23-61-15	152.7	180	74.7	.00
4	M	23-61-13	210.3	242	68.0	.52	30	M	23-62-17	151.6	190	62.3	.53
5	M	23-60-16	203.5	256	57.0	.39	31	AB	23-61-19	151.4	193	61.7	.52
6	M	23-60-12	199.2	229	65.8	.66	32	M	23-63-20	143.6	177	70.8	.71
7	M	23-59-15	186.8	224	66.2	.34	33	M	23-60-18	141.8	168	62.2	.74
8	M	23-61-21	184.2	228	63.8	.66	34	M	23-61-16	141.5	168	68.1	2.68
9	M	23-61-20	182.7	230	60.8	.65	35	M	23-60-13	140.1	163	63.9	.46
10	M	23-61-11	182.6	234	66.0	.21	36	M	23-63-18	139.3	156	73.8	.48
11	M	23-63-21	181.6	221	69.4	.45	37	M	23-60-17	138.9	164	64.3	.46
12	M	23-60-11	179.0	203	68.9	.86	38	M	23-62-20	138.5	168	55.1	.89
13	M	23-60- 9	175.1	217	67.4	1.04	39	M	23-62-12	135.6	170	69.9	.59
14	M	23-62-16	174.5	214	66.0	.58	40	AB	23-59-12	135.1	174	62.9	1.01
15	M	23-60- 8	173.1	207	68.4	.12	41	M	23-61-12	134.9	160	66.5	.47
16	M	23-59- 7	171.9	204	67.3	1.35	42	M	23-62-18	131.1	146	69.9	1.20
17	M	23-63-15	170.3	218	61.6	.23	43	M	23-59- 6	126.7	148	64.2	.34
18	AB	23-62-22	166.4	212	65.6	.59	44	M	23-63-23	125.1	156	60.5	.64
19	AB	23-61-18	162.9	213	58.4	.23	45	M	23-62-19	121.9	148	68.1	1.35
20	M	23-60-10	161.7	197	65.2	.25	46	AB	23-63-22	119.5	154	58.7	.00
21	M	23-59- 8	161.5	194	72.4	.77	47	M	23-63-16	117.8	149	66.3	.84
22	AB	23-61-14	159.8	194	74.4	.90	48	M	23-65-19	117.8	144	64.0	.87
23	M	23-62-21	159.8	196	65.4	.77	49	M	23-63-19	112.6	136	73.0	.18
24	M	23-59-14	159.7	190	65.8	.39	50	U	23-63-25	101.2	118	68.8	.21
25	AB	23-62-15	158.1	193	72.6	.13	51	U	23-60-14	88.5	106	64.3	.47
26	AB	23-59- 9	157.1	196	67.8	.26	52	U	23-60-15	79.3	94	66.0	.53

[1] These data relating to variable fruits cover only four years, 1912 to 1915, inclusive.

In Table V and the corresponding diagrams, figures 3 and 4, the trees in the two performance-record plats are grouped by strains, and the average annual production of the individuals of each group is expressed. Groups are included which comprise the five highest producing and the five lowest producing trees irrespective of their strain, and it is worthy of note that the trees showing the highest production in both plats are all of the Marsh strain. The average production of the trees of the Marsh strain is shown to be greater than the average for any other strain in the same plat. The crop of the one tree of the Rough strain in plat A can not fairly be considered comparable to the averages shown for the other strains.

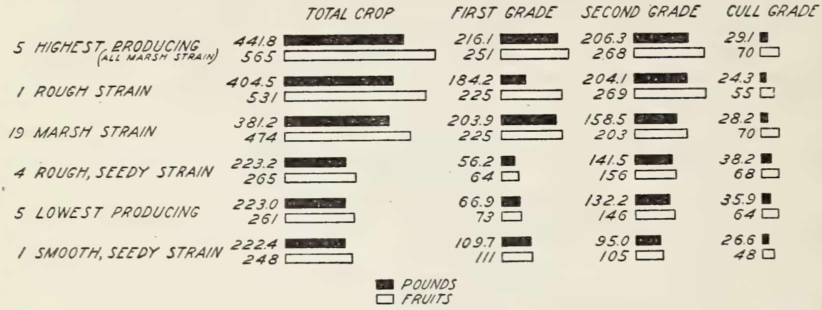


FIG. 3.—Average annual crop of the individual trees of the different strains of Marsh grapefruit occurring in the investigational performance-record plat A in a grove planted in 1898, being a summary of data for the 6-year period, 1910 to 1915, inclusive, except that the data relating to culls covers only the 4-year period, 1912 to 1915, inclusive.

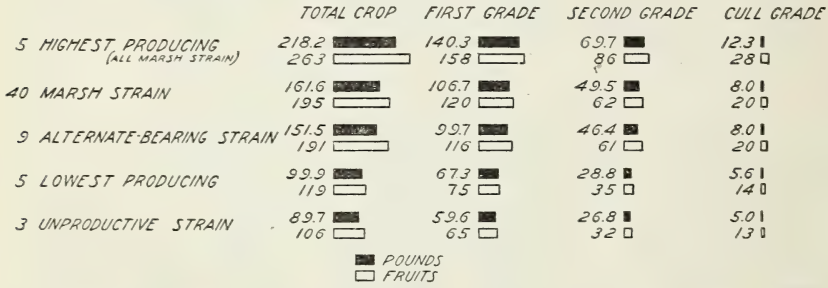


FIG. 4.—Average annual crop of the individual trees of the different strains of Marsh grapefruit occurring in the investigational performance-record plat B in a grove planted in the fall of 1903, being a summary of data for the 6-year period 1910 to 1915, inclusive, except that the data relating to culls covers only the 4-year period, 1912 to 1915, inclusive.

Figures 5 and 6 show the average annual proportions of fruit of the different grades in the crops of the trees of the various strains occurring in the investigational performance-record plats, based on the average weights of the crops for the six years, 1910 to 1915, inclusive. Figure 5 shows that in plat A the highest proportion of fruit of the first grade was produced by the trees of the Marsh strain, and this strain also bears the best quality fruit. The low proportion of first-grade fruit produced by the trees of the Rough Seedy strain was very noticeable. Figure 6 shows that in plat B there was practically no difference between the trees of the different strains in their proportions of fruit of the different grades.

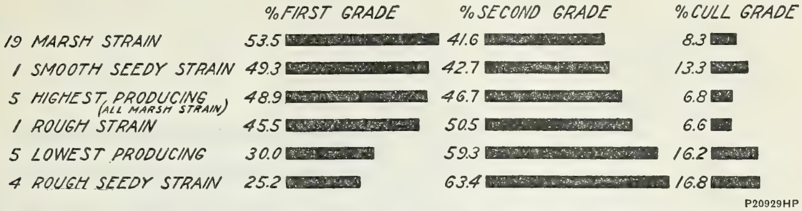


FIG. 5.—Average annual proportions of fruit of the different commercial grades in the crops of the trees of the various strains of Marsh grapefruit occurring in the investigational performance-record plat A in a grove planted in 1898. The percentages are based on the average weights of the crops for the 6-year period, 1910 to 1915, inclusive, except that the data regarding culls cover only the 4-year period, 1912 to 1915, inclusive.

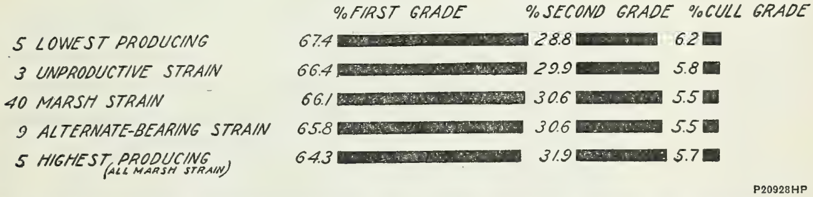


FIG. 6.—Average annual proportions of fruit of the different commercial grades in the crops of the trees of the various strains of Marsh grapefruit occurring in the investigational performance-record plat B in a grove planted in the fall of 1903. The percentages are based on the average weights of the crops for the 6-year period, 1910 to 1915, inclusive, except that the data relating to culls cover only the 4-year period, 1912 to 1915, inclusive.

TABLE V.—*Average total annual crop per tree of the different strains of Marsh grapefruit in investigational plats A and B, showing production by grades of fruit for the 6-year period, 1910 to 1915, inclusive.*

Description of trees.	Number of trees.	Average annual production.							
		Total crop.		First grade.		Second grade.		Cull grade.[1]	
		Weight.	Number.	Weight.	Number.	Weight.	Number.	Weight.	Number.
Investigational plat A:									
Highest producing (all Marsh strain)	5	*Lbs.* 441.8	565	*Lbs.* 216.1	251	*Lbs.* 206.3	268	*Lbs.* 29.1	70
Rough strain	1	404.5	531	184.2	225	204.1	269	24.3	55
Marsh strain	19	381.2	474	203.9	225	158.5	203	28.2	70
Rough Seedy strain	4	223.2	265	56.2	64	141.5	156	38.2	68
Lowest producing	5	223.0	261	66.9	73	132.2	146	35.9	64
Smooth Seedy strain	1	222.4	248	109.7	111	95.0	105	26.6	48
Investigational plat B:									
Highest producing (all Marsh strain)	5	218.2	263	140.3	158	69.7	86	12.3	28
Marsh strain	40	161.6	195	106.7	120	49.5	62	8.0	20
Alternate-Bearing strain	9	151.5	191	99.7	116	46.4	61	8.0	20
Lowest producing	5	99.9	119	67.3	75	28.8	35	5.6	14
Unproductive strain	3	89.7	106	59.6	65	26.8	32	5.0	13

[1] These data relating to cull fruits cover only four years, 1912 to 1915, inclusive.

Figures 7 and 8 show the average number of seeds per fruit produced by trees of the different strains in the performance-record plats.

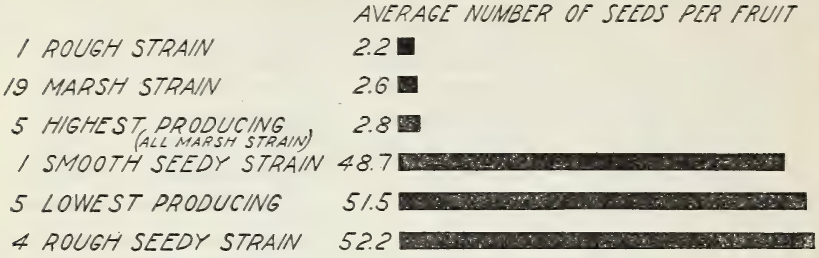


FIG. 7.—Average number of seeds per fruit found on trees of various strains of Marsh grapefruit in the investigational performance-record plat A in a grove planted in 1898, being a summary of the data secured during the 6-year period, 1910 to 1915, inclusive.

These data indicate that the most productive and most desirable strains and groups of trees bear fruit with the least number of seed. The high seed content of the fruits of the seedy strains is strikingly shown in figure 7.

Figures 9 and 10 show the percentages of fruits of a variable character found in the total crops of the trees of the various strains in the performance-record plats. Practically all of these fruits were forms of minor importance.

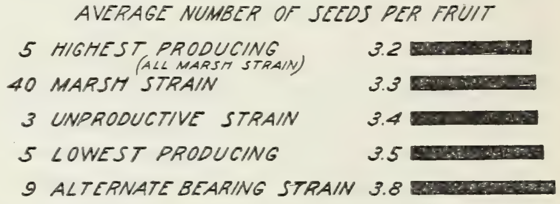


FIG. 8.—Average number of seeds per fruit found on trees of various strains of Marsh grapefruit in the investigational performance record plat B in a grove planted in the fall of 1903, being a summary of the data secured during the 4-year period, 1912 to 1915, inclusive.

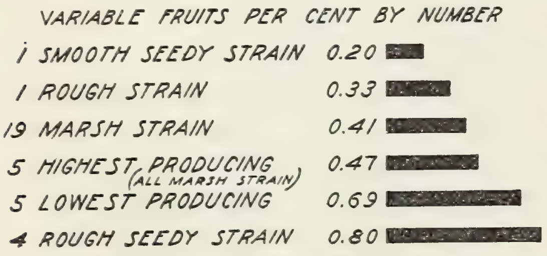


FIG. 9.—Percentage of variable fruits found on trees of various strains of the Marsh grapefruit in the investigational performance-record plat A in a grove planted in 1898, being a summary of the data secured during the 4-year period, 1912 to 1915, inclusive.

Figures 11 and 12 show the average production by weight of the different commercial sizes and grades from the five highest producing trees in each of the performance-record plats in comparison with the corresponding yields of the five lowest producing trees of these plats, respectively. These summaries are for the 6-year period, 1910 to 1915, inclusive, except that the data relating to culls cover only the four years, 1912 to 1915, inclusive. Figure 11 shows that the heaviest producing trees in plat A also bore the largest proportion of fruit of the most desirable sizes and of the Ivory-White (or first) grade. The data in figure 12 show that in plat B there was very little difference between the heaviest and lowest producing trees with respect to these same characters.

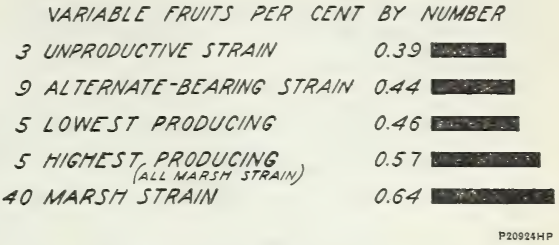


FIG. 10.—Percentage of variable fruits found on trees of various strains of the Marsh grapefruit in the investigational performance-record plat B in a grove planted in the fall of 1903, being a summary of the data secured during the 4-year period, 1912 to 1915, inclusive.

In figures 13 and 14 are shown the average number of fruits of the various commercial sizes produced during the 6-year period, 1910 to 1915, inclusive, by the five highest yielding and the five lowest yielding trees in the two performance-record plats. This production is expressed in percentages of a packed box for the fruit of each size.

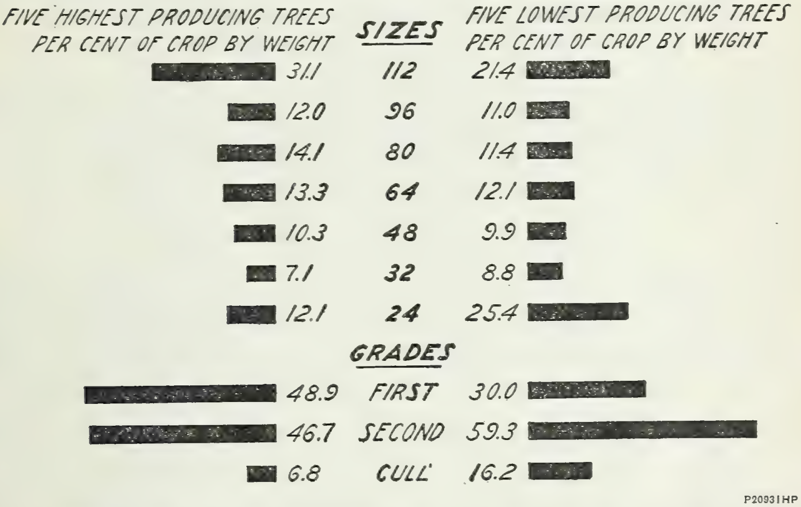


FIG. 11.—Average annual production by commercial sizes and grades from the five highest and the five lowest producing Marsh grapefruit trees, irrespective of strain, in the investigational performance-record plat A in a grove planted in 1898. The figures indicate the proportion of each size and grade to the total crop, calculated from their weights during the 6-year period, 1910 to 1915, inclusive, except that the data relating to culls cover only the 4-year period, 1912 to 1915, inclusive.

The yield on the acre basis is figured at the rate of production of both the highest and lowest yielding trees and the actual values of those possible yields are given. The figures show that the highest producing trees bore approximately twice the crop that was borne by the lowest producing trees. The great difference in production from the trees on the two plats is largely accounted for by the difference in the ages of the trees. The difference in the value of the crops from the highest and lowest producing trees serves to emphasize the desirability of propagating only from trees with known records of heavy and valuable production.

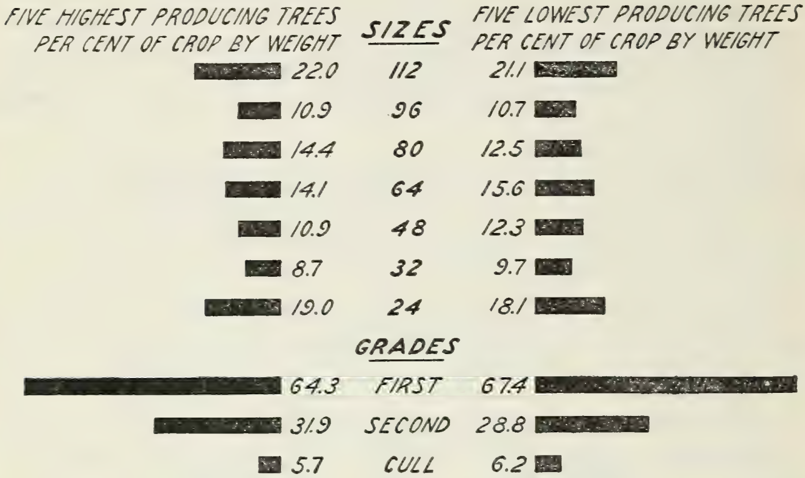


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FIG. 12.—Average annual production by commercial sizes and grades from the five highest and the five lowest producing Marsh grapefruit trees, irrespective of strain, in the investigational performance-record plat B in a grove planted in the fall of 1903. The figures indicate the proportion of each size and grade to the total crop, calculated from their weights during the 6-year period, 1910 to 1915, inclusive, except that the data relating to culls cover only the 4-year period, 1912 to 1915, inclusive.

COMPARATIVE VALUE OF THE STRAINS.

The Marsh is the most productive and most valuable strain within the Marsh variety. The flattened shape of the fruits, the smooth texture and waxy-white color of the rind, the abundance of juice of high flavor and fine quality, the commercially seedless condition of the fruits, and other characteristics, all combine to make them of superior value. The regular, heavy production of the trees under favorable conditions makes this strain one of the most stable and profitable of any of the citrus fruits in California. The increasing price paid for ripe fruits of this strain in many important markets during recent years is proof of their superior value. It would seem advisable to eliminate all other strains and varieties and grow only the Marsh strain in all commercial grapefruit orchards in California.

The seedy strains are undesirable, and the presence of even occasional fruits of this character in the crops is detrimental to the reputation of the variety. Because the fruits of the Smooth Seedy strain are similar in appearance to those of the Marsh strain, but heavily seeded, the only safe way to eliminate such fruits is by top-working the trees of the seedy strains, using for this purpose buds selected from desirable trees of the Marsh strain.

Where fruits of undesirable strains are borne on particular limbs in trees of the Marsh strain, they can be eliminated by cutting out those limbs. An examination of the trees before picking will reveal the presence of any limbs bearing poor or undesirable fruits.

The Alternate-Bearing strain is usually not as valuable as the regular-bearing Marsh strain. In order to stabilize and standardize the grapefruit industry, regularity of production must be secured.

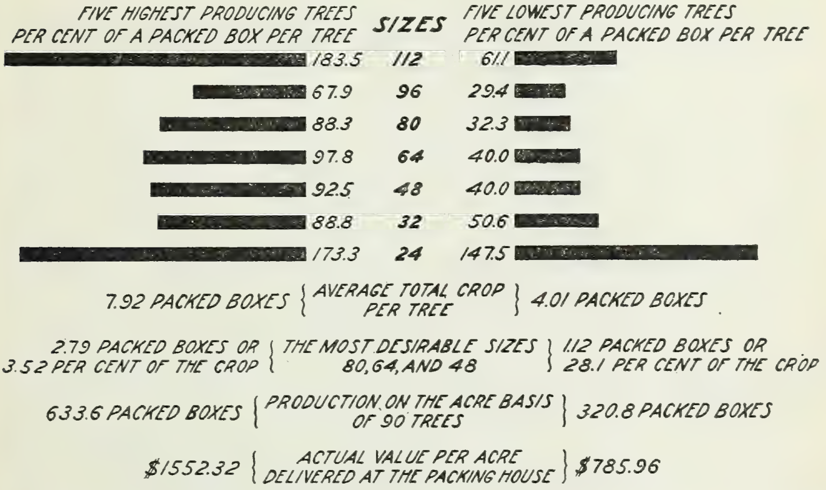


FIG. 13.—Average number of fruits of the various commercial sizes produced annually during the 6-year period 1910 to 1915, inclusive, by the five highest and the five lowest yielding trees of Marsh grapefruit in the investigational performance-record plat A in a grove planted in 1898. This production is expressed as percentages of a packed box calculated from the number of fruits of the different sizes contained in a box. The percentage of most desirable sizes is also stated, and the production on the acre basis is shown and its value calculated from the actual returns received for the fruit from this grove during the 6-year period.

The advisability of eliminating from established orchards trees having an alternate-season habit of production will depend on the amount of this production over a period of several years. If the production of the Alternate-Bearing trees is such as to be profitable, there is some question as to the desirability of top-working old established trees of this strain. If, however, the production of these Alternate-Bearing trees is unprofitable, there is no question but that they should either be removed and replaced by young trees of the Marsh strain, or, preferably, top-worked with buds selected from heavy bearing trees of the Marsh strain. Such trees, however, should never be used as parent trees from which to take propagating wood, no matter what their aggregate production may be.

Trees of the Bell, Rough, and Unproductive strains are all undesirable from the commercial standpoint, and should be eliminated in bearing orchards and avoided for propagation, except perhaps for purely experimental purposes. Fortunately, there are but few trees of these strains in most of the established California orchards of the Marsh variety, so that their elimination is a comparatively simple and inexpensive matter.

It is probable that by means of individual-tree records in bearing orchards covering two years most of the trees of inferior strains can be located, so that they can be top-worked with select buds of the Marsh strain.

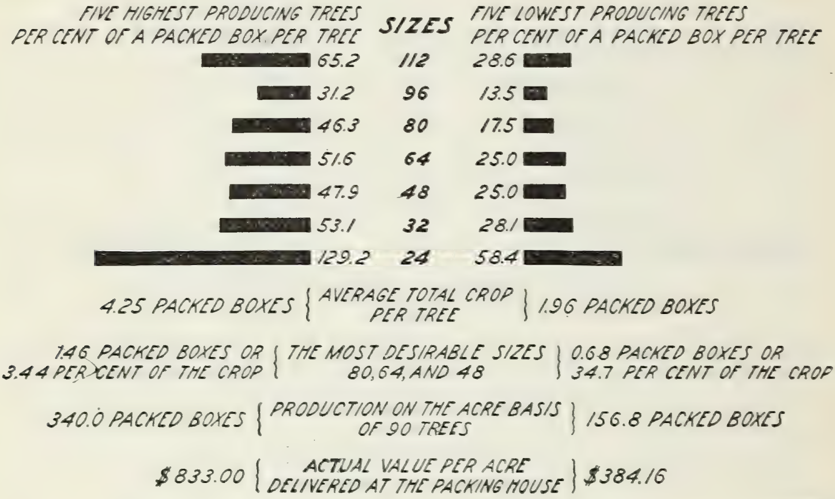


FIG. 14.—Average number of fruits of the various commercial sizes produced annually during the 6-year period, 1910 to 1915, inclusive, by the five highest and the five lowest yielding trees of Marsh grapefruit in the investigational performance-record plat B in a grove planted in the fall of 1903. This production is expressed as percentages of a packed box calculated from the number of fruits of the different sizes contained in a box. The percentage of most desirable sizes is also stated, and the production on the acre basis is shown and its value calculated from the actual returns received for the fruit from this grove during the 6-year period.

THE UNINTENTIONAL PROPAGATION OF UNDESIRABLE STRAINS.

The trees of undesirable strains in established orchards have been propagated unintentionally through a lack of careful selection of bud wood. Heretofore, all trees of the variety have been considered to be equally good for propagation, and little or no selection of trees or bud wood has been practiced.

As an illustration of this condition, the experience of the senior writer in 1910, in the first grapefruit orchard selected for individual-tree performance-record work, may be cited. In this orchard, as soon as the owner found that the seedy fruits were mainly borne by certain trees he decided to top-work those trees with select buds from trees of the Marsh strain. The senior writer was asked to select several desirable trees of this strain as sources of bud wood. Five trees were selected for this purpose and the bud wood was cut by men having had long experience in securing bud wood for propagation. After several hours' work one of these men approached the senior writer, who was working in the investigational performance-record plat near by, and said that they had been unable to obtain enough bud wood from the five trees originally selected for this purpose. He explained that, in order to secure an adequate supply, they had cut some bud wood from a neighboring tree. He was asked whether they had examined any of the fruits from this sixth tree, and he replied, "No, we never cut any fruits, but the tree looks just as good as the other five trees."

A doubt as to whether or not the additional tree was a desirable one led to an inspection of its fruits. The first fruit cut was found to contain more than 100 seeds. The production of this tree was low and the fruits of very inferior quality. Further examination showed that this tree was a typical representative of the Seedy strain, the very strain, in fact, which the workmen were preparing to eliminate by top-working. Inasmuch as the bud wood from the seedless and the seedy trees had been mixed together in the bundle of bud sticks, it was necessary to secure an entirely new lot of buds from other trees of the Marsh strain. It is interesting to note that the 118 trees of the Seedy strain top-worked in that orchard at that time have now all come into fruiting, and without exception the fruits borne by the growth from the buds of the Marsh strain are all commercially seedless and have the valuable characteristics of the fruits borne by the trees from which the buds were taken.

It can easily be seen from this experience how trees of the undesirable strains in established orchards of Marsh grapefruit have been unintentionally propagated under the old system of cutting bud wood. This experience also offers effective evidence of the need of great care in bud selection, which can be most accurately accomplished through the use of individual-tree performance records and definite tree knowledge.

THE ISOLATION OF STRAINS THROUGH BUD SELECTION.

The results of the propagation work in these investigations have proved beyond a reasonable doubt that the Marsh strain of grapefruit can be established and maintained through the careful selection of bud wood from select trees of the Marsh strain. In the course of these investigations many propagations have been made from select Marsh strain trees. Several commercial orchards have been propagated in this way. So far as these trees have come into fruiting they have all proved to be of the Marsh strain. In other words, an improved Marsh strain has been isolated and established and brought into fruiting. The trees of this improved strain are very uniform and their production is of the best grade and quality. Variation within the strain has been reduced through bud selection and from the commercial standpoint it has been eliminated. Doubtless further improvement in this strain can be effected through further bud selection in succeeding bud generations, and experiments of this character are now under way. The most important step, however, the establishment of a superior strain, has been effected. Owing to a lack of opportunity, no attempt has yet been made to isolate an inferior strain, except in the case of the seedy strains. A limited propagation of this commercially worthless strain has been made experimentally and has shown that it, too, can be isolated and established by the selection of buds from trees persistently bearing fruits of this character. There is every reason to believe that the other strains can be similarly established, and in an experimental way this work is now being done. Such propagations are of no commercial value except that they further illustrate and demonstrate the importance of careful bud selection in the propagation of the variety.

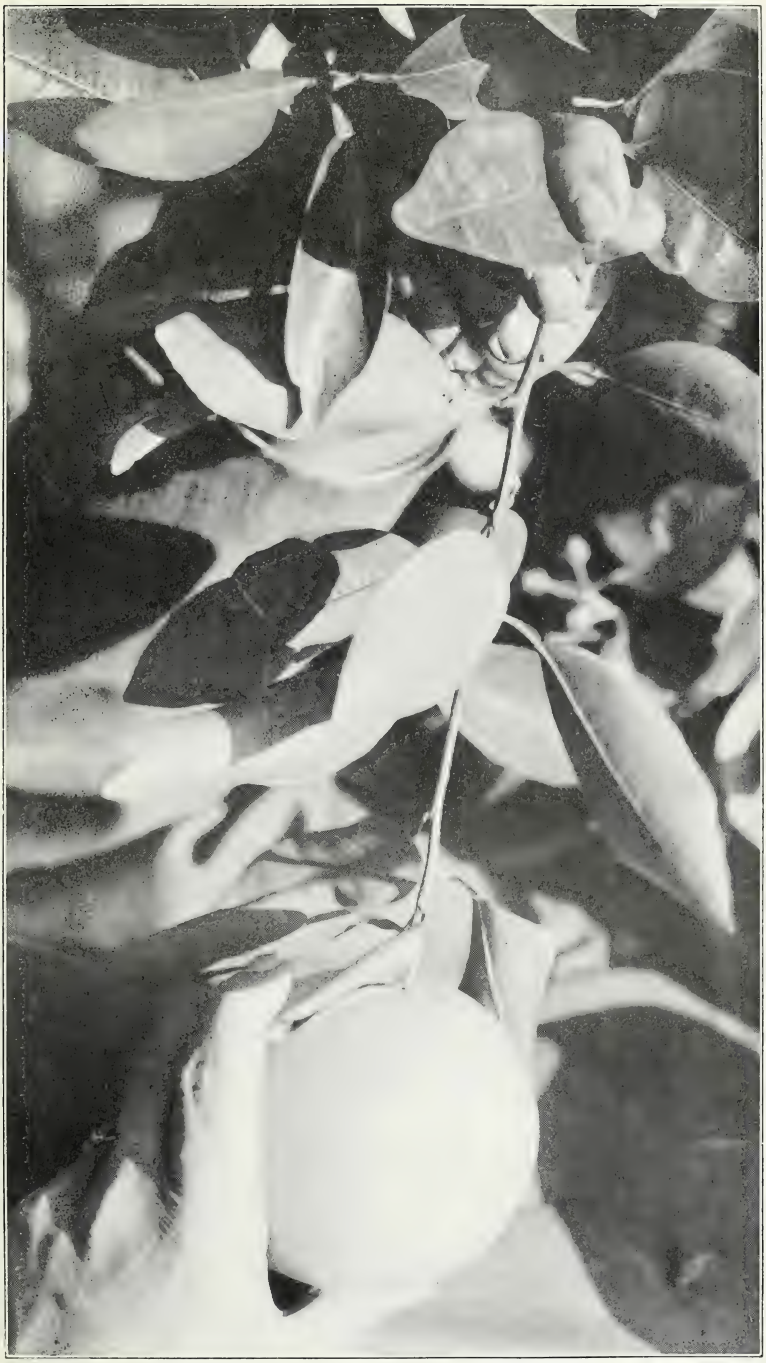
Owing to the fact that the commercial grapefruit industry in California is still in its infancy, the careful selection of buds from trees of the Marsh strain for all future propagations will likely result, throughout the State as a whole, in the development of trees of a uniform character and the production of crops of proved quality and value, an achievement unequaled in the history of any other citrus variety now grown commercially.

TOP-WORKING UNDESIRABLE TREES.

Healthy trees of undesirable strains can be successfully top-worked and replaced by the valuable Marsh strain through the use of buds selected from trees of that strain. This operation has been successfully performed on trees 12 years old. Doubtless older trees can be as successfully top-worked by the use of similar methods.

The selection of trees of the Seedy, Bell, and Rough strains for rebudding can usually be based on an inspection of the fruits. In the case of trees of the Alternate-Bearing and the Unproductive strains their selection should be based on performance records for two or more seasons, preferably an even number.

Two or more of the main limbs of the trees to be top-worked should be used as foundations for the new trees. All branches interfering with the work of budding should be cut away. The select buds should be inserted in the limbs, two or more in each, about 12 inches from the trunk of the tree. After the buds have united with



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TYPICAL FRUIT-BEARING BUD STICK FROM A SELECT MARSH GRAPEFRUIT TREE, SHOWING THE KIND OF BUD WOOD RECOMMENDED FOR USE IN PROPAGATING THIS VARIETY.

the limbs in which they were inserted the limbs should be cut off about 6 inches above the buds, and the cut surfaces should be coated with grafting wax. The tree trunks and all portions of the limbs left after the tops have been removed should be coated heavily with whitewash or other protective material, in order to prevent possible injuries due to sunburn and exposure.

From time to time all growth except that from the select buds should be carefully removed; otherwise portions of the new tree heads will be made up of sprouts from the old limbs. In some cases the tender growth from the select buds may be attacked by insect pests, in which event the insects must be promptly killed or removed. It is a good plan to protect this growth during its first exposure to winter weather by means of bundles of grass, cornstalks, or other suitable material.

After one season's growth of the select buds the stubs of the original limbs should be cut off just above the buds, making the cuts oblique in order to facilitate their healing. The cut surface should be covered with grafting wax or some other protective material, in order to prevent decay and promote the healing of the wound.

Careful attention should be given the rebudded trees for the first two or three years, in order to protect the new growth from undesirable conditions. After that such trees will require no attention or care other than that given the remainder of the trees in the orchard.

THE SELECTION OF BUD WOOD.

Bud wood for use in top-working trees of undesirable strains, or for other propagation work, should be taken from the most productive, regular-bearing trees of the Marsh strain. These trees should be selected on the basis of their performance records and the character and appearance of the individual trees. Fruit-bearing bud wood, viz, that bearing typical fruits of the kind desired, an illustration of which is shown in Plate XI, should be used exclusively for propagation purposes.

The bud wood should be packed in moist moss or other suitable material immediately after cutting, in order to preserve the buds in a fresh, viable condition until they are used. If the bud wood is to be kept for some time, it should be packed and held in a uniform, cool temperature.

Vigorous-growing, nonbearing bud wood, or that commonly known as sucker wood, has been, until recently, highly prized and commonly used for propagation purposes. Under that practice more bud wood was, of course, cut from trees having the most suckers than from the trees having the fewest suckers. It has been determined in these investigations that the trees producing the most sucker growth usually are of an undesirable strain; hence, the use of sucker wood for bud wood is probably directly responsible for much of the propagation of trees of inferior strains of the Marsh grapefruit.

SUMMARY.

The grapefruit industry in California, while of comparatively small commercial importance at present, is growing rapidly and seems likely to become an important factor in the citrus production of the State. Many of the varieties of grapefruit first planted in California proved to be of inferior commercial value. The success of the industry began with the introduction of the Marsh variety.

The Marsh variety originated at Lakeland, Fla., and was named and introduced there by Mr. C. M. Marsh, of that place, about 1895. Previous to this date, in 1890, before the variety had become established in Florida, it was introduced into California by Twogood & Cutter, of Riverside.

Bud variations in the trees of the Marsh variety of grapefruit are of frequent occurrence, and are a great commercial handicap to the growers and consumers.

Six strains arising from bud variations have been found during these investigations up to the present time.

The most valuable commercial fruits and those of the best quality are produced by trees of the Marsh strain. This strain only should be propagated for commercial purposes.

The undesirable strains which are found in commercial plantations heretofore have been propagated unintentionally through a lack of care in bud selection.

The Marsh strain can be established and maintained and variation within the strain reduced to a minimum through bud selection based on individual-tree performance records.

Healthy trees of undesirable strains can be successfully top-worked by using select buds from trees of the Marsh strain.

Only fruit-bearing bud wood should be used for propagation, and it should be selected from the most productive and otherwise most desirable trees. A practical method for locating such trees in commercial orchards is presented by the United States Department of Agriculture in Farmers' Bulletin 794, entitled "Citrus-Fruit Improvement: How to Secure and Use Tree-Performance Records."

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